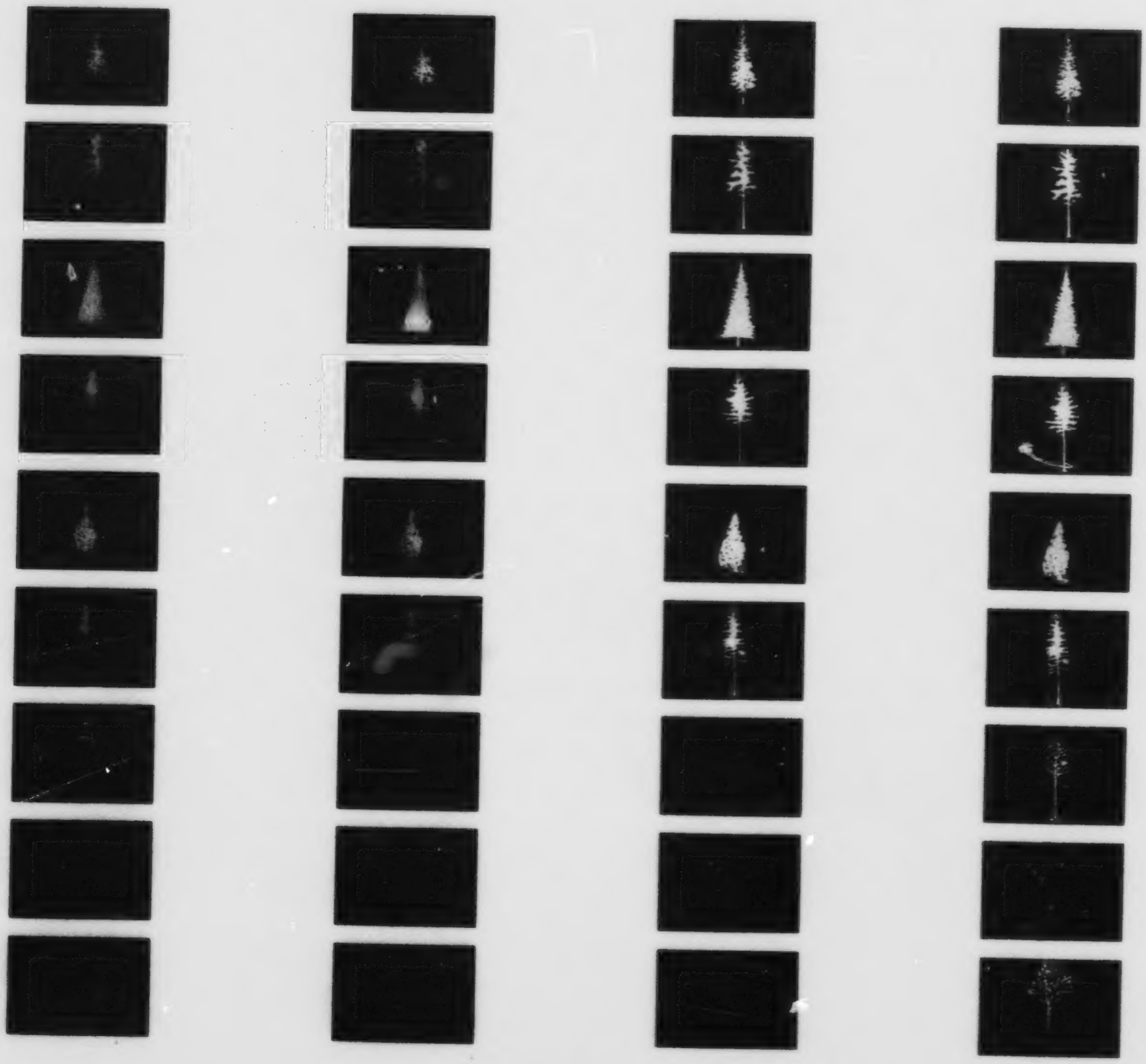
Forestry Canada Forêts Canada

Canada's forest inventory 1986 – technical supplement

S.L. Gray and K. Nietmann

Information Report PI-X-86
Petawawa National Forestry Institute



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CANADA'S FOREST INVENTORY 1986 – TECHNICAL SUPPLEMENT

S.L. Gray and K. Nietmann

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FOREWORD

Canada's forest inventory is renewed periodically to collect the best data available from source inventories of agencies responsible for managing the forest. Because source inventories are continually being updated and improved, the 1986 national inventory is the most comprehensive to date. It should, however, be recognised that these periodic inventories are not a true time series, and statistical differences between successive inventories do not necessarily represent real change in the forest during the reporting interval.

A major technical leap was made in 1981 when questionnaires reporting summaries at the provincial level were replaced by computerised data for over 40 000 map cells. The 1986 inventory not only contains newer information than was available in 1981, but includes almost all significant blocks of forest land. This time the inventory has been further improved with respect to technical specifications, quality control, and data handling. The technical specifications in this report describe the data attributes used. It has been agreed that technical specifications for the data will not change again before the 1991 inventory.

Not all source inventories can provide data for all categories of information, and users of the inventory need to recognize such deficiencies. Missing values are described thoroughly in this report. Another major component of the report records the relationship between standardized national codes and those of the component source inventories.

For more information concerning the inventory, or for special requests for product, please contact:

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Petawawa National Forestry Institute
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Chalk River, Ontario
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Canada's forest inventory continues as a major cooperative effort between Forestry Canada and the forest management agencies which provide the source data, most notably the provinces. The chiefs of inventory of the provincial and territorial forest services participate in the Canadian Forest Inventory Committee (CFIC). The assistance of the CFIC in developing Canada's forest inventory 1986 is gratefully acknowledged.

J.J. Lowe
Manager, Forest Inventory Project

ABSTRACT

Canada's forest inventory 1986 is a base for strategic decision-making as well as being background information. The report describes source data for Canada's forest inventory 1986, how they were compiled, and gives precautions for proper use. Data summaries and maps are reported in separate publications.

The inventory coverage has improved since the last Canada-wide inventory (1981) and now includes all significant forestry areas. The result is the most up-to-date wood volume information for Canada as of 1986. A special feature of these forestry data is that they are available by 43 172 geographic units, most of which are about 100 km^2. These kinds of spatially detailed data can then be combined with other spatially referenced data.

The information is up to 40 years old (1946) and on average is 10 years old (1976). The data consist of area and volume statistics by up to 12 classifiers. The volume data are available for up to 19 species groups for pulpwood and sawwood utilization specifications. Age class, predominant genus, sawwood volumes, cull factors to give net volumes, policy constraint, productivity, and tree size-volume relationship are new since the last inventory. Several other refinements are introduced, especially an improved handling of missing values and stocking. Not all classifiers and classes are available from every source inventory.

RÉSUMÉ

L'Inventaire des forêts du Canada 1986 est une base de décision stratégique et un document de référence. Dans le rapport, on explique d'où viennent les données qui ont servi à la préparation de l'inventaire, comment elles ont été compilées et de quelle façon il faut s'en servir. Les sommaires et les cartes font l'objet de publications séparées.

Par comparaison à l'inventaire national de 1981, les données sont plus complètes : toutes les régions forestières d'importance sont maintenant inventoriées. Le produit final est un recueil de renseignements le plus à jour possible en 1986 sur les volumes de bois du Canada. L'un des intérêts particuliers de ces données de foresterie vient de ce qu'elles se présentent par unités géographiques dont la plupart mesurent environ 100 km^2 de superficie : on compte en tout 43 712 unités. En raison de leur caractère géographique détaillé, ces données peuvent se combiner à d'autres données également caractérisées géographiquement.

Les renseignements fournis peuvent dater de 40 ans (1946), mais en moyenne ils datent de 10 ans (1976). Il s'agit de statistiques sur les superficies et les volumes dont le classement peut mettre en jeu jusqu'à 12 critères. On donne les volumes de bois de pâte et les volumes de bois d'oeuvre pour 19 groupes d'espèces. De nouveaux facteurs ont été ajoutés à ceux de l'inventaire précédent : classes d'âge, genre prédominant, volumes de bois d'oeuvre, taux de carie pour la détermination du volume net, contraintes découlant de la politique forestière, productivité et relations entre la taille de l'arbre et le volume. Il y a plusieurs autres améliorations, notamment en ce qui concerne le traitement des valeurs manquantes et de la densité relative. Les sources d'inventaire ne donnent pas toujours tous les classements.

INTRODUCTION

Forestry Canada (previously Canadian Forestry Service or CFS) summarizes wood volume and area statistics at five-year intervals, coincident with Census of Canada reports. The last wood volume report was for 1981 (Bonnor 1982). The latest inventory statistics are presented in "Canada's forest inventory 1986" (Forestry Canada 1988). This report is a companion to the latter document.

The purpose of this report is to provide background information about and documentation for the 1986 forest inventory. This report will be of interest to people using the data and to forest inventory specialists.

This Technical Supplement could be used in three ways. First it could be used by those preparing to retrieve data from the 1986 inventory in order to understand the origin of the data. It can also be used to interpret better the meaning of results from retrieved data. Appendix 1 is a key reference as it documents which classifiers in the source inventories were recoded to which classifiers in the Canada-wide format.

Second, this report could be of value to forest inventory specialists in both designing inventories and learning about Canadian forest inventories. Forestry students taking forest mensuration courses can make reference to this report.

Third, this Technical Supplement could be an essential reference for contractors and provincial employees in preparing data for the 1991 inventory and the Federal Forest Inventory. The Canada-wide classifiers are to remain the same until at least 1991, with changes limited to the types of forestry map sheets by which data are summarized.

Other reports, brochures, and posters about wood volume and other closely related statistics have been prepared (Forestry Canada 1988) or are planned. A service of providing other summaries, maps, or data sets is offered by the Forest Inventory Project at PNFI.

CHAPTER 1 A framework for describing Canada's forest resources

1.0 Background

At the National Conference on Forestry Statistics in Kingston, Ontario, April 1976, the CFS was requested to propose a format for a new national forestry information system (Stewart 1976). Development of a new system commenced shortly after (Bowen 1977; Lee et al. 1977; Madill 1977) and in 1979 the Canadian Forest Inventory Committee (CFIC) recommended that the CFS adopt the approach described in a pilot study (Bonnor 1978a).

The approach decided upon was to compile existing forest inventory data into a common format. In contrast, national statistics in many other countries are carried out on samples from permanent (or sometimes temporary) plots to standards specified by a coordinating agency. These data are collected independently of the forest management inventories that are also undertaken in these countries.

The advantages of our approach are: first, the nationally reported figures will match those reported by the provinces; second, it is cost effective; and third, the data can be obtained for small geographic areas and, therefore, fairly detailed thematic maps can be produced.

The disadvantages are: first, some minor areas are not inventoried; second, component inventories are not always compatible, of the same age, or have all categories of information available; third, time series monitoring and change monitoring are very difficult to do and are discouraged (Gillis 1988a); fourth, there is no independent confirmation of provincial statistics; and fifth, statistical accuracy cannot be calculated.

The 1981 inventory marked the first Canadian forestry use of the new approach. This system brought national statistics into the computer age. The ability to provide statistics went well beyond a single report of tabular summaries to the creation of a database from which a whole series of reports and maps could be prepared.

The most dramatic difference between pre-1981 and the 1981 forest inventory report was the first publication of computer-controlled thematic mapping of stand-level data aggregated to geographic units of about 100 km^2. The storage of forestry data by geographic units meant a significant improvement in the degree of detail of the data and the way data could be displayed. Before 1981 data was only available by province or territory. Furthermore, forest data could be combined with information as diverse as acid precipitation and climatic data through the use of the overlay capability of a geographic information system (GIS).

Categories of data included with the national forest inventory were also changed for the 1981 report. In 1976 and earlier, national forest inventory reports included figures on harvesting, fire, pest and disease depletions, as well as the annual allowable cut (Bowen 1978). These data are now reported separately (Kuhnke and Brace 1986; CFS 1984). Forest productivity figures continue to be reported separately (Bickerstaff et al. 1981) although the data are now part of Canada's forest inventory. Data summaries that go beyond the forest resources are prepared by the Economics Branch (CFS 1984). Further analysis of resource data has been done by Honer and Bickerstaff (1985).

2.0 The role of national statistics

A national inventory provides basic statistics for structured and nonstructured data requirements (Zwart 1986). Structured information requirements are for those problems where there is agreement as to the data needed. On the other hand, nonstructured requirements are ill-defined, open-ended as to the type and quantity of information required.

A number of agencies are dependent on national forestry statistics, for example:

1) for funding allocation
   a) the Canadian Interagency Forest Fire Centre, Winnipeg, Manitoba;
   b) federal-provincial agreements; and,
   c) federal direct delivery programs (Gaspé Agreement);
2) for decision support systems in
   a) national wood supply-demand analysis (Forestry Canada Economics Program),

b) international global wood supply analysis (International Institute for Applied Systems Analysis, IIASA),
c) forest fire management systems (Quebec and Ontario),
d) forest insect and disease monitoring, impact analysis and decision support system (Forest Insect and Disease Survey Technology Development Project, PNFI);

3) for special impact analysis studies such as climatic change and acid precipitation.

Nonstructured information requirements in Canada and internationally are served by providing a series of publications giving basic national statistics as tabular summaries and as maps (at scales of 1:5 million or 1:20 million). The information is also maintained in a database and a service is offered to provide analysis and retrieval of the data on demand.

The publication of maps permits more detailed portrayal of forest resources and allows studies of climatic, biophysical, and phytogeographic topics. For example, the poster of species distribution by volume classes (CFS 1986) shows quantitatively, for the first time, the distribution of major tree species. Species are known to occur outside their reported distribution (Hosie 1969).

The data can also be summarized on an as needed basis for government agencies, universities and public interest groups for a variety of purposes. The data could also be used as a component in multi-staged sampling designs.

3.0 The Canadian Forest Resource Data System (CFRDS)

The CFRDS is a computer-based information system which provides the capability of storing, processing, analyzing, and reporting geographically-referenced data on Canada's forest resources. It consists of a number of forest resource-related data sets, software to analyze and report the data, and the necessary hardware (see Figure 1). Canada's forest inventory 1986 and Canada's forest biomass inventory 1984 are two of these data sets. GIS technology is taken advantage of to reference information in the CFRDS by geographic elements. Virtually all of the data sets in CFRDS contain both attribute and spatial data.

Each attribute data set contains a location code and forest resource information. The location code is the reference used by the province or territory, or other inventory source, to identify the map sheet, township, Universal Transverse Mercator (UTM) cell, etc. to which the data applies. This smallest summary unit in the CFRDS is known as a cell and, collectively, the cells are referred to as the CFRDS grid. Each spatial unit has an unique identifier. The larger summary units, such as forest sections and regions, are called polygons and contain a number of cells.

Figure 2 shows the cells for the 1986 inventory. These are stored digitally and is referred to as the spatial data set. Each unique cell identifier matches a location code in its associated attribute data set, so that the attribute data can be mapped with the GIS.

4.0 A general description of Canada's forest inventory 1986

The national forest inventory data set consists of the location information, 12 classifiers, and the numerical attribute information. The location data has two classifiers; province and cell identifier.

The attribute data are stratified by 12 classifiers. They are:

data source	-	inventory type and intensity
ownership	-	land owner
status	-	control of land for harvesting
land class	-	description of land (forest, water, etc.)
site quality	-	a measure of the relative productive capacity of a site
stocking	-	description of density of forest
cause of disturbance	-	reason for nonstocked and unproven stocking
age	-	forest age as of the year of information in 20-year classes
maturity	-	forest manager's opinion based on age and other considerations
forest type	-	description of forest

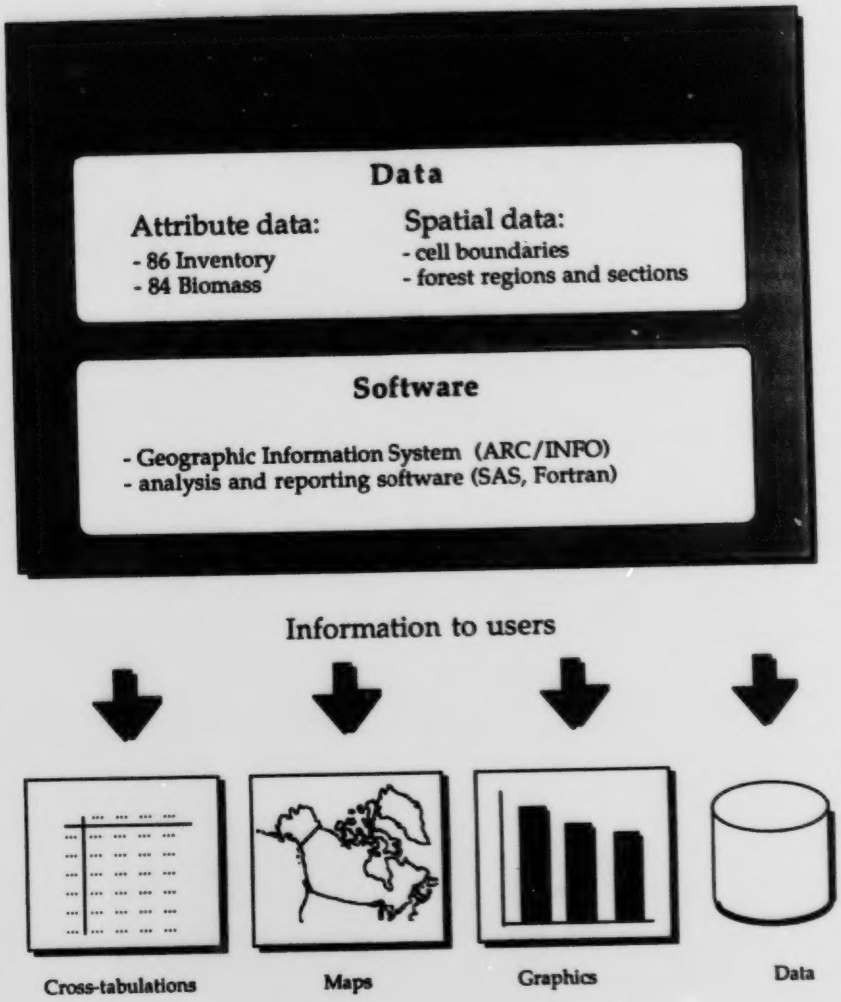

Data
Attribute data:
- 86 Inventory
- 84 Biomass
Spatial data:
- cell boundaries
- forest regions and sections
Software
- Geographic Information System (ARC/INFO)
- analysis and reporting software (SAS, Fortran)
Information to users
Cross-tabulations
Maps
Graphics
Data

Figure 1. CFRDS as a system of hardware, software, and data.

canopy as hardwood, softwood or mixedwood

predominant genus - description of forest by most abundant genus according to cover type description

year of information - year in which information was obtained, usually the year of photography

Each classifier has several classes, as illustrated in Figure 3 and discussed in detail in Chapter 2. The figure shows the logical structure among the classifiers. In land class, productive forest is further classified, but the other classes are not, except for year. In stocking, stocked forest records are further classified, while the other classes are not, except for year.

Each record in a cell has an unique combination of the classifiers, along with the location code, and numerical attributes. On average there are

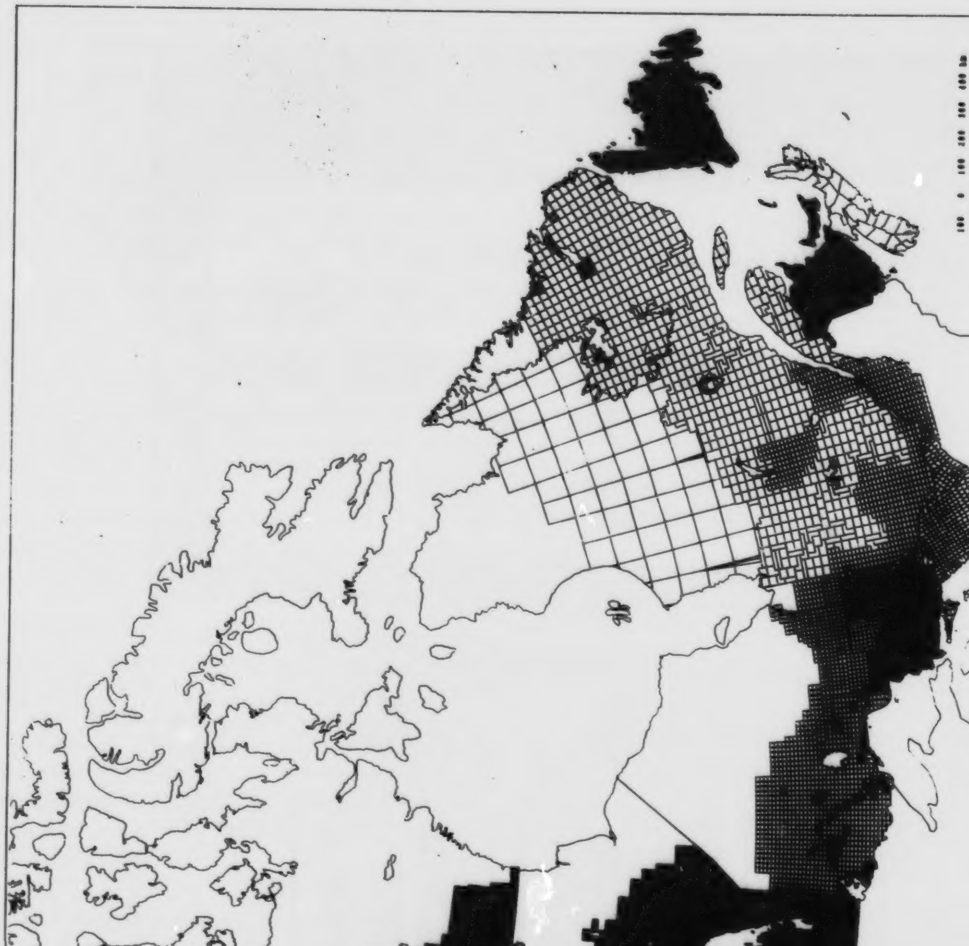

100 0 100 200 300 400 500

Figure 2: Cells used for Canada's forest inventory, 1986.

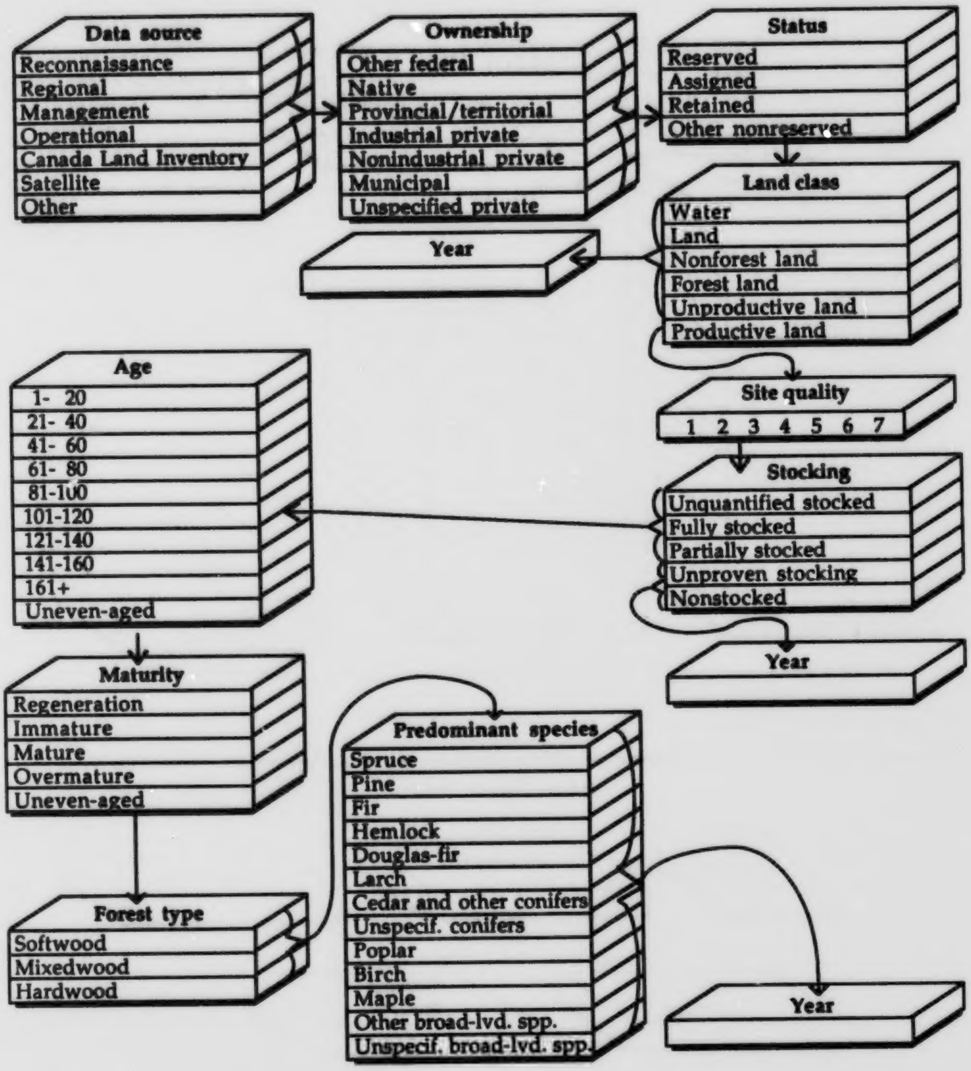

Data source
Reconnaissance
Regional
Management
Operational
Canada Land Inventory
Satellite
Other
Ownership
Other federal
Native
Provincial/territorial
Industrial private
Nonindustrial private
Municipal
Unspecified private
Status
Reserved
Assigned
Retained
Other nonreserved
Land class
Water
Land
Nonforest land
Forest land
Unproductive land
Productive land
Year
Age
1- 20
21- 40
41- 60
61- 80
81-100
101-120
121-140
141-160
161+
Uneven-aged
Site quality
1 2 3 4 5 6 7
Stocking
Unquantified stocked
Fully stocked
Partially stocked
Unproven stocking
Nonstocked
Year
Maturity
Regeneration
Immature
Mature
Overmature
Uneven-aged
Predominant species
Spruce
Pine
Fir
Hemlock
Douglas-fir
Larch
Cedar and other conifers
Unspecif. conifers
Poplar
Birch
Maple
Other broad-lvd. spp.
Unspecif. broad-lvd. spp.
Forest type
Softwood
Mixedwood
Hardwood
Year

Figure 3. Organization of classification attributes in the main file.

about 30 records per cell for each cell in Canada. Each of these records represents an unique forest stand or, more often, a number of stands with the same unique combination of classifiers. The classifiers, with their classes, can be combined in about 1.2 billion unique ways.

The numerical attributes are area and volume. The area is in hectares, and the volume is gross merchantable cubic metres per hectare to one decimal place. The volumes are for 19 species groups and for two utilization standards - pulpwood and sawwood (see Figure 4). The volumes can be reported for 2, 11, or 17 species groups depending on the level of detail in the source inventories.

There are five data sets that are closely related to the forest inventory data, and provide additional information about it (see Figure 4). These are referred to as auxiliary data sets, and are listed below:

cull = per cent discount to

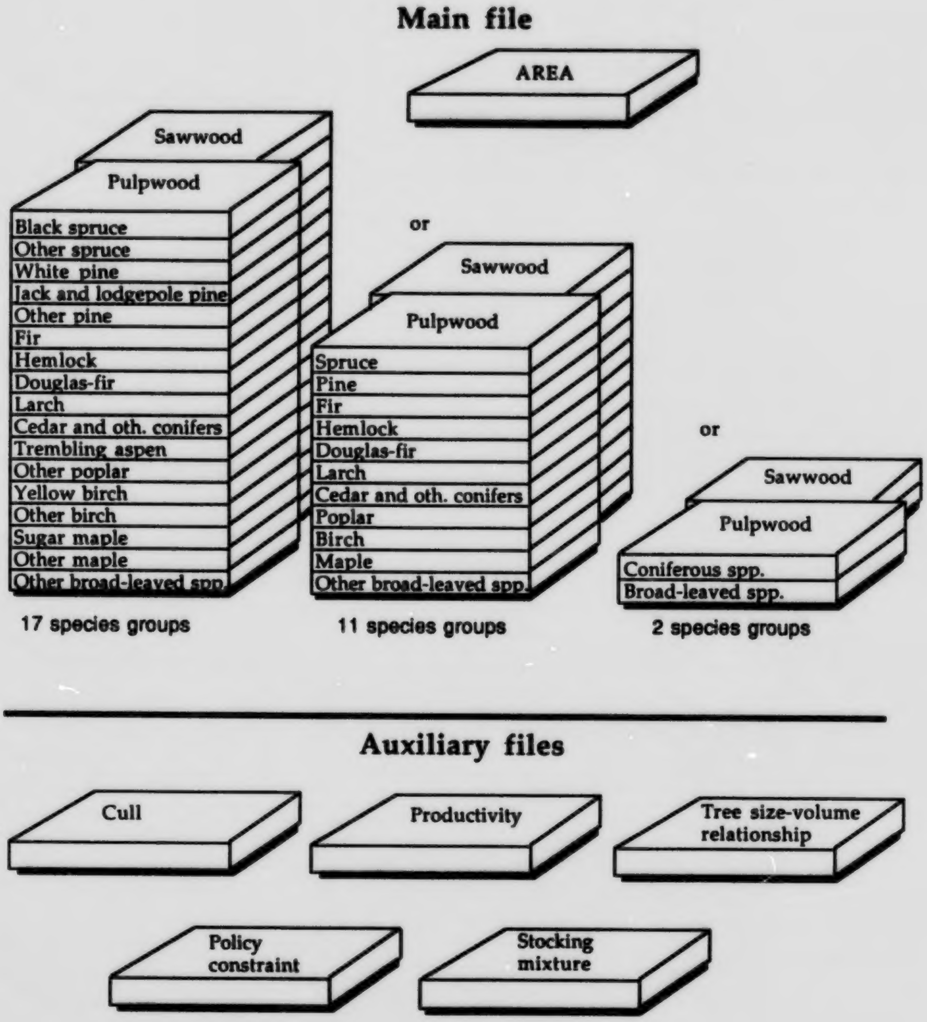

Main file
AREA
Sawwood
Pulpwood
Black spruce
Other spruce
White pine
Jack and lodgepole pine
Other pine
Fir
Hemlock
Douglas-fir
Larch
Cedar and oth. conifers
Trembling aspen
Other poplar
Yellow birch
Other birch
Sugar maple
Other maple
Other broad-leaved spp.
17 species groups
or
Sawwood
Pulpwood
Spruce
Pine
Fir
Hemlock
Douglas-fir
Larch
Cedar and oth. conifers
Poplar
Birch
Maple
Other broad-leaved spp.
11 species groups
or
Sawwood
Pulpwood
Coniferous spp.
Broad-leaved spp.
2 species groups
Auxiliary files
Cull
Productivity
Tree size-volume relationship
Policy constraint
Stocking mixture

Figure 4. Organization of numerical attributes.

bring volumes down to net merchantable from gross merchantable

policy constraint = measure of the availability of wood for harvest by law, regulation, or declared or undeclared owner policy

productivity = mean annual increment of the forest in cubic metres per hectare per year

stocking mixture = percentage of areas coded as unproven stocking in non-stocked, partially stocked, and fully stocked categories

tree size-volume relationship = parameters for functions describing the relationship between diameter and volume

The information in these auxiliary data sets is available for areas which vary in size and shape from one province to another, but all of which are larger than the cells. These large regions have also been digitized. Through the GIS, auxiliary data can be combined with inventory data. For example, cull data can be used to arrive at an approximation of net merchantable volume from the gross merchantable volumes stored in the inventory data file. Or the tree size-volume information could be used to adjust for different utilization specifications across Canada.

CHAPTER 2 Detailed specifications for Canada's forest inventory 1986

1.0 Introduction

This chapter describes the classification and numeric attributes in detail. Definitions of the terms are given below the description of the coding.

The definitions of the majority of classifiers are qualitative. In the main file, only site quality and age class are described quantitatively. The auxiliary file data are all defined quantitatively.

Table A in Appendix 2 describes the file layout of the main file. This and the layouts in Tables B and C of Appendix 2 are used for data exchange. Table D in Appendix 2 describes sample coding situations. The file layout for the five auxiliary files is given in Appendix 3. The specifications for magnetic tapes for data exchange are in Appendix 4.

2.0 Terms and definitions

Where possible, the standard CFIC terminology (Bonnor 1978b) was used. If no number is given in brackets at the end of a definition, the definition is specific to this inventory. The numbers in brackets refer to the following references:

(1) Bonnor (1978b): A guide to Canadian forest inventory terminology and usage
(2) Society of American Foresters (1958): Forest Terminology. A glossary of technical terms used in forestry. 3rd ed. rev.
(3) Ford-Robertson (1971): Terminology of forest science, technology, practice and products.
(4) Empire Forestry Association (1953): British Commonwealth forest terminology. Part 1. Silviculture, protection, mensuration and management together with allied subjects.

3.0 A description of the main file

3.1 Location codes (fields 1 and 2)

3.1.1 *Province or territory (field 1)*

1	Newfoundland
2	Nova Scotia
3	Prince Edward Island
4	New Brunswick
5	Quebec
6	Ontario
7	Manitoba
8	Saskatchewan
9	Alberta
10	British Columbia
11	Yukon Territory
12	Northwest Territories

3.1.2 *Cell reference (field 2)*

The source inventories typically compile their data by map sheets or other polygons. These are referred to in this report as cells. The cell reference code identifies these map polygons. The aim is eventually to have all cells 100 km^2 in size. The most frequently used cell coding schemes are the Universal Transverse Mercator (UTM) grid designations and the National Topographic Series (NTS) map codes.

A detailed description of the transformation of provincial cell codes to this coding scheme, as well as related information such as dimensions, average areas, and the number of cells, is given in Appendix 1.

3.2 Classification attributes (fields 3 to 14)

3.2.1 *Data source (field 3)*

Inventory type:

1	Reconnaissance
2	Regional
3	Management
4	Operational
	Other inventory sources
5	Canada Land Inventory
6	Satellite
7	Other
8	Missing value

Reconnaissance: An exploratory, extensive forest inventory with no detailed estimates obtained (1).

A formal sampling design is generally not used, and no precision estimates are obtained.

Regional: A detailed, extensive forest inventory for planning on a regional or provincial basis (1).

Major forest types are usually mapped, with estimates given for each type. Precision estimates given for total inventory volume.

Management: A detailed, intensive forest inventory for management purposes of an area managed as one unit (1).

The forest types are usually mapped in detail with estimates given for each type. Precision estimates given for total inventory volume.

Operational: An intensive forest inventory of a small area for harvesting purposes (1).

Individual stands are mapped, with estimates given for each stand.

3.2.2 *Ownership*

	Crown
1	Other federal
2	Native
3	Provincial/territorial
	Private
	Specified owner
4	Industrial private
5	Nonindustrial private
6	Municipal
7	Unspecified private
8	Missing value

Other federal land: Crown land within the jurisdiction of the federal government except for land under the jurisdiction of the Department of Indian and Northern Affairs. Includes National Parks, National Defence, Transportation, and Crown Corporations.

Native land: Land within an Indian Reserve or Indian Settlement. Could be extended to other native groups such as Inuit and Metis if circumstances and land settlements require.

Provincial/territorial land: Crown land within the jurisdiction of a Provincial or territorial government or Northern Affairs of the Department of Indian and Northern Affairs.

Industrial private land: Land owned by a large corporate industry for commercial forestry purposes.

Nonindustrial private land: Land owned by corporations or individuals that may or may not be used for commercial forestry purposes.

Municipal land: Land that is the property of a municipality or other government agency.

Unspecified private land: Land owned by corporations or individuals at an unknown scale of operation.

3.2.3 *Status*

1	Reserved
	Nonreserved
2	Assigned
3	Retained
4	Other
8	Missing value

Reserved (land): Forest land that by law is not available for the harvesting of forest crops (1).

Nonreserved (land): Forest land that by law is available for the harvesting of forest crops (1).

Assigned (land): Crown-owned forest land no longer under the direct, immediate control of the crown (1).

Includes crown land that has been leased or licensed to private agencies.

Retained (land): Crown-owned forest land under the direct, immediate control of the crown (1).

Other nonreserved (land): Private forest land that is available for harvesting forest crops.

3.2.4 *Land class (field 6)*

8	Missing value (unspecified land class)
	Land class available
6	Water
5	Land (unspecified forest/nonforest)
4	Nonforest
3	Forest (unspecified productivity)

2	Unproductive
1	Productive

Nonforest land: Land not primarily intended for growing, or not supporting, forest (1).

Includes urban parks and gardens, orchards, wooded pastures and range lands.

Forest land: Land primarily intended for growing, or currently supporting, forest (1).

Includes land not now forested such as clearcut lands, northern lands that are forested but not intended for any use; and plantations.

Unproductive: Forest land that is incapable of producing a merchantable stand within a reasonable length of time (1).

Includes muskeg, rock, barrens, marshes, meadows, etc. within forest land area.

Productive: Forest land that is capable of producing a merchantable stand within a reasonable length of time (1).

3.2.5 *Site quality (field 7)*

1	Site class 1: 5.0 to 9.9 m[a]
2	Site class 2: 10.0 to 14.9 m
3	Site class 3: 15.0 to 19.9 m
4	Site class 4: 20.0 to 24.9 m
5	Site class 5: 25.0 to 29.9 m
6	Site class 6: 30.0 to 34.9 m
7	Site class 7: 35.0 and greater
8	Missing value
9	Not applicable (Land classes 2 to 6)

[a] Height at a total age of 50 years

Site quality: A measure of the relative productive capacity of a site for one or more species (1).

The two principal measures are site capability and site index.

Site index: An expression of forest site quality based on the height, at a specified age, of dominant and codominant trees in a stand (1).

May be grouped into site classes. Expressed in metres. Usually refers to a particular species.

Site class: Any interval into which the site index range is divided for purposes of classification and use (1).

Total age: The number of years elapsed since the germination of the seed, or the budding of the sprout or root sucker (2).

Of a forest, stand or forest type, the mean age of the trees comprising it (3).

In practice, in an even-aged or regular forest, the average age of dominant trees, taken from the year in which the forest was formed, that is exclusive of the age of any nursery stock.

3.2.6 *Stocking class (field 8)*

Stocking class describes situations ranging from nonstocked to different densities of stocked forest. Nonstocked refers to land that is known to have few trees or is below a threshold that defines stocked.

Unproven stocking refers to land that cannot readily be classified. It is disturbed land known to be productive but where tree growth was not visible. For example, there may be a substantial number of trees regenerating but they do not show up on the aerial photographs. Unproven stocking areas include a mixture of nonstocked, partially stocked, and fully stocked areas.

Special ground surveys are often done independently to determine what per cent of these areas are stocked. The forest managers can also provide estimates based on their field experience. The stocking mixture auxiliary file was established in order to retain this kind of information. The information is collected on a regional basis rather than for each site. This file is described in Section 7.5 of this chapter.

Partially and fully stocked are the forest manager's interpretation of crown closure or density. In the case of partially stocked forests it means that forest growth is reduced and treatment may be considered. Fully stocked forests have reasonable growth and treatment is not likely to be a consideration. Table 1 was used in adapting local density classes to these Canada-wide terms.

Table 1. **Forest growth and potential treatment by stocking class**

Stocking class	Growth	Possible treatment under extensive protection forestry
Nonstocked (productive forest)	Virtually nil	Should be considered
Unproven stocking	Could be nil, not known	Should be considered
Partially stocked	Significantly reduced	May be considered, but is not always cost effective
Fully stocked	Generally reasonable for extensive management (includes optimum as well as some over- and understocking)	Generally not considered

Some information of potential interest is omitted due to general unavailability. For example, there is no classifier describing partial disturbance. The age of the disturbance is also not considered.

- 9 Not applicable (Land classes 2 to 6)
- Applicable
  - 8 Missing value
  - Stocking available
    - Stocked
      - 5 Unquantified stocked
      - Quantified stocking
        - 4 Fully stocked
        - 3 Partially stocked
    - 2 Unproven stocking
    - 1 Nonstocked

Stocking: A qualitative expression of the adequacy of tree cover on an area, in terms of crown closure, number of trees, basal area, or volume, in relation to a preestablished norm (1).

In this context, tree cover includes seedlings and saplings, hence the concept carries no connotation of age.

The degree of stocking may be classified as: a) stocked versus nonstocked; or b) understocked, fully stocked, or overstocked. It may also be expressed as a percentage of the preestablished norm or stocking factor.

Stocked forest land: Land supporting tree growth (1).

In this context, tree cover includes seedlings and saplings.

Unquantified stocked: Stocked forest land but the distinction of partially and fully stocked is not available.

Fully stocked: Stocked forest land where yield is generally reasonable for extensive management and treatment is generally not considered.

Includes some under- and overstocking.

Partially stocked: Stocked forest land where yield is significantly reduced and treatment may be considered.

Unproven stocking: Forest land that has had the tree cover removed or killed and where the subsequent degree of stocking has not been assessed.

There is a lag time after disturbance before stocking can be established and recognized.

Nonstocked forest land: Land capable of producing but generally lacking in tree growth (2).

3.2.7 *Cause of disturbance (field 9)*

Cause of disturbance applies to nonstocked and unproven stocking records only. The four following classifiers, maturity to predominant genus as well as the volumes are coded as not applicable for these cases.

1	Cutover
2	Burn
3	Pest
4	Other
8	Missing value
9	Not applicable (land class 2 to 6 or stocking class 3 to 5)

Cutover: An area of forest land from which some or all timber has recently been cut (1).

Burn (burned-over): Land which has recently been burned (1).

Pest: Forest land on which some or all trees have been killed by insects or disease.

3.2.8 *Age class (field 10)*

Age class is the total age of the forest to the year of information (not updated to 1986). Twenty-year age classes are used. When there was an offset in the starting year of the age class, best fit was used. For example, 6 to 25 years would be treated as age class 1 (1 to 20 years).

	Even-aged
0	0 years
1	1 to 20 years
3	21 to 40 years
5	41 to 60 years
7	61 to 80 years
9	81 to 100; or 81 and greater years
11	101 to 120; or 101 and greater years
13	121 to 140; or 121 and greater years
15	141 to 160; 141 to 250; or 141 and greater years
20	161 and greater; or 251 and greater years
-5	Uneven-aged
-8	Missing value
-9	Not applicable (land class 2 to 6 or stocking class 1 to 2)

Age class: Any interval into which the age ranges of trees, forests, stands, or forest types is divided for classification and use. Also the tree, forest, stand, or forest type falling into such an interval (1).

3.2.9 *Maturity class (field 11)*

Maturity is based on age, species group, and other considerations defining the appropriate time to harvest the wood. Maturity applies to pulpwood utilization and to the stand at the year of information rather than being updated to 1986.

	Even-aged
1	Regeneration
2	Immature
3	Mature
4	Overmature
5	Uneven-aged
8	Missing value
9	Not applicable (land class 2 to 6 or stocking class 1 to 2)

Regeneration: The renewal of a forest crop by natural or artificial means. Also the new crop so obtained (4). The new crop is generally less than one metre in height (1). In this context it is the new crop, not the act of renewal, that is being described.

Immature: In even-aged management, those trees or stands that have grown past the regeneration stage but are not yet mature.

Mature: In even-aged management, those trees or stands that are significantly developed to be harvestable and that are at or near rotation age (includes overmature trees and stands if an overmature class has not been recognized).

Overmature: In even-aged management, those trees or stands that grow past the mature stage.

Even-aged: Of a forest, stand, or forest type in which relatively small age differences exist between individual trees (1).

The maximum difference in age permitted is usually 10 to 20 years; if the stand will not be harvested until it is 100 to 200 years old, larger differences of up to 25 per cent of the rotation age may be allowed.

Uneven-aged: Of a forest, stand, or forest type in which intermingling trees differ markedly in age (1).

The minimum difference in age permitted in an uneven-aged stand is usually 10 to 20 years.

3.2.10 *Forest type (field 12)*

1	Softwood
2	Mixedwood
3	Hardwood
8	Missing value
9	Not applicable (land class 2 to 6 or stocking class 1 to 2)

Forest type: A group of forested areas or stands of similar composition which differentiates it from other such groups (1).

Softwood: A forest type in which 76 to 100 per cent of the canopy is coniferous.

Mixedwood: A forest type in which 26 to 75 per cent of the canopy is coniferous.

Hardwood: A forest type in which 0 to 25 per cent of the canopy is coniferous.

3.2.11 *Predominant genus (field 13)*

The predominant genus is the most abundant genus according to the cover type description. This is usually the first species in the cover type description of the stand in the source inventory.

In class 7, other conifers include juniper, yellow cypress, and western yew. Poplar includes trembling aspen and other poplars. For a complete description of the species for each predominant genus class and species groups described below, see Appendix 5.

When forest type and predominant genus codes are used in combination they give a reasonable level of description of the forest composition. For example, softwood spruce is distinguishable from mixedwood spruce.

1	Spruce
2	Pine
3	Fir
4	Hemlock
5	Douglas-fir
6	Larch
7	Cedar and other conifers
8	Unspecified conifers
9	Poplar
10	Birch
11	Maple
12	Other broad-leaved species
13	Unspecified broad-leaved species
-8	Missing value
-9	Not applicable (land class 2 to 6 or stocking class 1 to 2)

Predominant genus: The most abundant genus in the cover type description.

Forest composition: A cover type description consisting of the forest type and predominant genus.

3.2.12 *Year of information (field 14)*

For each record, the year in which the information was obtained. This is usually the year of photography.

3.3 Numerical attributes (fields 15 to 53)

3.3.1 *Area (field 15)*

The area in hectares.

3.3.2 *Volume (fields 16 to 53)*

Volume is the gross (or net) merchantable volume in m^3 per ha to one significant digit as of the year of information. It can be reported for 19 species groups for each of pulpwood and sawwood utilization standards.

Not all inventories have data available by the detailed species groups. There are two other possibilities. The volume data may be available either at genus level or as coniferous and broad-leaved subtotals. When volume is available at the genus level for spruce, pine, poplar, birch, and maple then the volume is placed in the other spruce, other pine, etc. field. A more specific field such as black spruce is coded 'missing value' when it is within the range of the species and coded as zero if it is outside the range. The species range was taken from Hosie (1969).

When the data are only available as coniferous and broad-leaved subtotals then all the species that could occur are coded as 'missing value' and the species outside their range are coded as zero. The volume data are stored in the unspecified coniferous and broad-leaved species fields.

Volume: The amount of wood in a tree, stand, or other specified area, according to some unit of measure or some standard of use (2).

The unit of measure may be m^3 or m^3 per ha. The standard of use may be pulpwood or sawtimber. Usually expressed inside bark and according to different specifications.

4.0 Utilization factors

Utilization specifications vary from province to province and within provinces. These are appropriate for local industrial practices at the time of the source inventory. Volumes are normally provided as gross or net merchantable volume, but the former is preferred.

The volume data are provided to both pulpwood and sawwood utilization specifications. The former are broader and, therefore, the pulpwood volumes include sawwood volumes.

The maturity or operability of the stand is not a factor. For example, an immature stand may include trees of sawwood size, in which case a sawwood volume is reported. The utilization standards are described in Appendix 6.

Gross merchantable: Volume of the main stem, excluding stump and top but including defective and decayed wood, of trees or stands (1).

Net merchantable: Volume of the main stem, excluding stump and top as well as defective and decayed wood, of trees or stands (1).

Pulpwood: Wood of a size or quality that the reporting jurisdiction generally considers as suitable for pulp, fibre, chip, commercial chemical, or commercial fuel use, or is used only in smaller sizes such as posts or rails.

Sawwood: Wood of a size or quality that the reporting jurisdiction generally considers as suitable for lumber, veneer, other manufacture that does not require reconstitution, or use in the round requiring equivalent size (such as poles and pilings).

5.0 Two-storied stands

This type of forest is not recognized as such in the national inventory. Reporting agencies generally report the overstorey. The understorey or a combination of over- and understorey may be reported if it is of more significance to forest management.

6.0 Missing values and 'not applicable' codes

Missing values and 'not applicable' are consistently coded throughout as 8 or -8 and 9 or -9, respectively. These terms are described here in more detail.

Missing value means the information is not available from the source inventory. The information may be misplaced or miscoded in the source data. As well, the reporting agency may have found the information to be of little significance in the region. As described in Section 3.3.2 above, missing values in volume fields of the main file mean the record is within the range of the species but the volume data are missing for that species.

'Not applicable' means it is not appropriate to consider a certain classification attribute or numerical attribute. For example, when the land class is code 2 to 6 (nonforest to water) then the only classifiers applicable are data source, ownership, status, year of information, and area. The 'not applicable' code is used in the cull and tree size-volume auxiliary files when the species is outside its range. Appendix 2 gives examples of the use of the missing value and 'not applicable' codes.

7.0 Description of the auxiliary data

7.1 Introduction

The auxiliary files contain information that supplements the main file. Auxiliary data allow related data collected at a different geographic scale to be combined with the main data. There are five auxiliary files. Adjustments for cull and for policy constraints are two ways of reducing volume figures. A relationship of volume by tree diameter allows more detailed wood supply studies and improved standardization of differing utilization standards. Computer software is used to link auxiliary data with the main data files by a combination of location codes and classifiers.

The auxiliary files provide information by large regions. A GIS is used to match the cell codes to the region codes so that the auxiliary data can be related to the main file.

The auxilary files use only one to three of the 12 classifiers in the main file as well as the location code to form the linkages. The classifiers selected for an auxiliary theme are those for which significant differences are expected in the numerical attributes.

Section 3 of Chapter 2 describes how much of the auxiliary data was available at the time the inventory was compiled. Tables E to I in Appendix 3 describe the exchange format for these files.

7.2 Cull

The wood volumes in the main file are usually gross merchantable. This auxiliary file provides a per cent discount for cull. These discounts can be used to calculate the net merchantable volumes from the gross merchantable volumes. Gross merchantable volumes are used in the standard reports (with one exception as described in Appendix 6).

Cull is the volume of material unmerchantable under prevailing utilization practices because of poor form, limbyness, rot, or other defect. Cull is higher for sawwood utilization than for pulpwood utilization. Pulpwood cull does not usually include defects in form.

Cull estimates are provided for large regions by age class and species group. Some agencies may also use site quality. Cull estimates apply only to mature and overmature conditions. These are the only maturity classes of interest in national wood supply models.

7.3 Policy constraint

There are three major factors that affect wood availability. First, the wood must be physically present in the size, amount, and species required. Second, the wood must be available for harvesting by law, regulation, and declared or undeclared owner policy. Third, it must be economically feasible to harvest, transport, and process the wood.

Policy constraints for wood harvesting apply to the second case. Reserved status lands, such as national parks, are heavily constrained from wood harvest over their whole area. Nonreserved lands generally include some degree of constraint. These may be reserve buffers on streams and lakes, special fish and wildlife concerns (such as deer wintering yards and fish spawning beds), and areas of thin soils. Where there is a larger per cent of private lands, some provinces have conducted opinion polls to determine owner preferences for forest harvesting. Many nonindustrial owners prefer not to harvest their wood.

Policy constraint is applicable to combinations of ownership and status and is usually known for large regions. Policy constraint data are percentages that reduce the area to area unconstrained for harvesting. Some managers estimate this within broad classes, or to the nearest 1, 5, or 10 per cent. Sampling may provide more precise estimates.

One constraint class is a special case for forest lands that can be harvested once and then will no longer contribute to sustained-yield management. This applies, for example, to forest lands designated for settlement and clearing for agricultural purposes.

Policy constraint is expressed as a per cent of the productive forest land whether it is accessible or not. Economic accessibility is a separate consideration outside this inventory.

7.4 Productivity

Productivity is the average growth rate on stocked productive forest land and is usually described in cubic metres per hectare per year. The growth rate may be expressed by geographic region, site quality, forest type, and predominant genus. The growth rate may also be expressed for coniferous and broad-leaved subtotals or as an all species total. The figures are usually given as the mean annual increment at rotation age (MAIr); thus the average growth up to maturity. Bickerstaff et al. (1981) describe different ways these figures can be derived. The periodic annual increment (PAI) is given if the former is not available. Many of the figures available in the database come from Bickerstaff et al. (1981).

7.5 Stocking mixture

Stocking mixture is a regional description based on samples or professional judgement. It provides factors with which the unproven stocking area can be divided into per cent nonstocked, partially or fully stocked at the time of the inventory. Other classifiers that may be significant are the cause of disturbance and site class.

7.6 Tree size-volume relationship

This auxiliary file contains parameters for functions describing the pulpwood volume by diameter at breast height. Tree size is one of the principal variables determining harvesting and wood processing costs in national wood supply modelling.

Volume by diameter class information is described by a mathematical function, the Weibull function. This function has gained wide acceptance as a model to describe tree distribution (Alberta Forestry, Lands, and Wildlife 1987) since it was first used to model tree diameter distributions (Bailey and Dell 1973).

The managing agencies often have available stock tables by species and diameter classes. These are converted into Weibull function parameters using techniques outlined by Zutter et al. (1982). This information can be stored in the auxiliary file by regions and for up to five classifiers. Only mature and overmature records are of interest, although allowance is made for cases where information cannot be provided in the desired fashion.

Two (or three) parameters of the Weibull function can be used to model the distribution of volume. These parameters also give useful information about the nature of the distribution. The scale parameter (b) is approximately equal to the 63rd percentile of the distribution and highly correlated to the quadratic mean diameter. In Figure 5, a progression of b values of 20, 30, and 40 can be seen to correlate with diameters of the same values. A shape parameter (c) value of about 8, as used in Figure 5, is negatively skewed such that the modal diameter is about the same as the scale (b) value. Other shape values (c) result in distributions skewed differently.

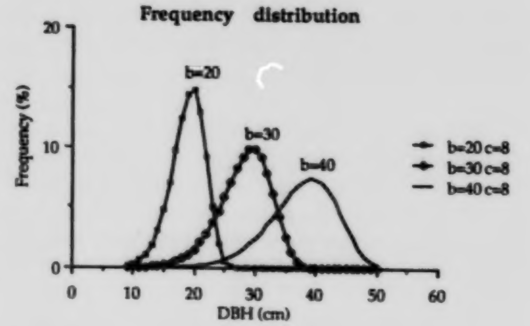


Figure 5. The relationship between the scale parameter (b) of the Weibull function and the DBH.

Figure 6 shows how the inverse cumulative form of the Weibull function can be used in CFRDS to express the per cent of the volume that is greater than a specified diameter. For any diameter the per cent volume of that size or greater can be determined. In addition, volume can be expressed between diameters, say the per cent of volume from 10 to 20 cm. The 37th percentile of the inverse function corresponds to diameters that are equal to the scale parameter.

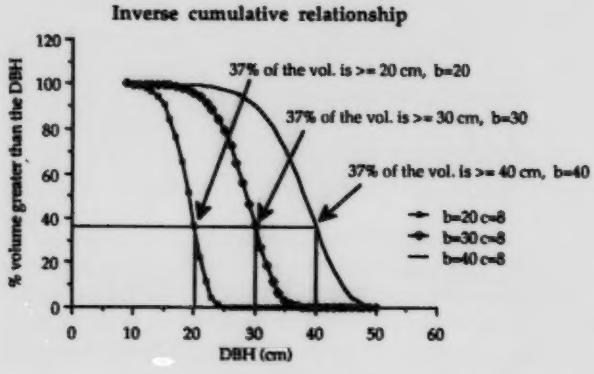


Figure 6. The use of the inverse cumulative function in computing the per cent volume greater than a specified DBH.

8.0 Significant changes since 1981

There have been a number of significant changes since the last inventory of 1981 (Bonnor 1982). They are described below.

Southwestern Ontario, northern Quebec, and southwestern Manitoba are now included in the inventory. A special effort was made jointly by PNFI and certain provinces (as reported in Gillis 1988b) to include forest statistics for the commercial forest zones in southern and northern Saskatchewan, and southern Alberta.

Federal ownership has been expanded for two new classes. Native lands are separated in recognition of the evolving changes in responsibility for their forest management. The territorial land managed by Northern Affairs is now grouped with provincial land under the ownership classifier because each territory is developing its own forest service. The provincial and territorial lands can still be distinguished using the province and territory code.

There are other classifiers that have been modified or are new. Private lands are reorganized and now include municipal land. Lands owned by corporations as a source of industrial wood are distinguished from those under more personal ownership. Stocking is restructured and new terminology is introduced. Age class and predominant genus are new classifiers.

Wood volume is now reported for sawwood utilization as well as for pulpwood. There has been further differentiation of the volume as well. Six species groups -- i) black and red spruce; ii) white pine; iii) jack, lodgepole, and shore pine; iv) trembling aspen; v) yellow birch; and vi) sugar and black maple -- were separated from the rest of their genera in the volume fields. These species groups are considered to be significantly different from others in their genus for commercial or other reasons. Insect and disease damage assessment and acid rain studies are examples.

The concept of auxiliary data is new to CFRDS in the 1986 inventory. Although the data are not complete, it is hoped that more data will become available as the need for the information increases.

CHAPTER 3 The availability of attributes

1.0 Introduction

This chapter describes the sources of data. There are two major groups of data in this inventory and they are dealt with separately. Sections 2.0 and 3.0 review sources for the wood volume data and auxiliary attribute data respectively.

2.0 Main data

Canada's forest inventory 1986 is a compilation of 37 inventories. It is a summary of forest inventories in the source agencies' computer databases as of 1986. However, the information itself is based on remote sensing (usually aerial photography) which has an average date of 1976 but ranges from 1946 to 1986.

About half (53 per cent) of the data come from provincial inventories. This includes, to a small extent, data from private industry forwarded via a province. The rest (47 per cent) of the inventory was prepared by the CFS either directly, recoded from provincial inventories as available in the 1981 inventory database, or from special joint inventories.

The CFS component is outlined in more detail below. About one quarter (27 per cent) of the data come from inventories done by the CFS (especially inventories for the Yukon and Northwest Territories), as well as from surveys of Department of National Defence lands, national parks, and other data from the Federal Forest Inventory (FEDINV81). The latter is treated as a single source inventory but is itself a composite of a number of inventories. Another 18 per cent were compiled by PNFI using inventory data previously provided by the provinces but which required transformation from 1981 to 1986 format (referred to in the tables as NATINV81 and BIOMASS84 data). Finally 3 per cent of the data was obtained from three joint PNFI-provincial inventories that provide volume estimates for southern Saskatchewan and Alberta forest-grassland zones and a northern Saskatchewan forest zone. These inventories provided quantitative data for what previously were gaps in the forestry coverage.

These special inventories are described in more detail in Gillis (1988b). Table 2 describes the source and age of each contributing inventory.

All inventories have as minimum common denominators data source, ownership, status, land class, and forest type. Most inventories have cause of disturbance, maturity class, and pulpwood volumes by species groups or genera. However, only one of the 37 inventories has the full complement of information.

From a negative perspective, some of the inventories are missing some information. As a per cent of the total area inventoried, 60 per cent do not have age class and 50 per cent do not have predominant genus or sawwood volume. Many do not have relative stocking (42 per cent) or site class (30 per cent). Some (24 per cent) only have volume as coniferous and broad-leaved subtotals. Table 3 shows which inventories have which attributes.

The data in Canada's forest inventory 1986 as shown in Table 3 does not always reflect the situation in a source inventory. Inventories compiled by PNFI from 1981 to 1984 (NATINV81, FEDINV81, and BIOMASS84 per Table 2) did not include relative stocking, age class, predominant genus, or the same differentiation of volume into species groups. Therefore, when these data were used for the 1986 inventory, these classifiers were not available. On occasion, steps were taken to incorporate additional information. For example, New Brunswick volumes were further divided into species groups by using regional ratios. In two other cases the 1981 Federal Forest Inventory had been modified to retain relative stocking and this information was coded into the 1986 inventory.

The inventories from other federal lands generally have an older age of information and do not have any volumes. Much of this FEDINV81 data came from Department of Environment biophysical surveys in the 1960s and 70s, and Department of Fisheries and Forestry reconnaissance surveys of Indian reserves in the 1960s.

Table 2. Per cent of source inventory by age of data

(per cent)

Province or territory	Source agency	Inventory	Area inventoried (10^3 ha)	Area (% of total inventoried area)	Average year of inventory	<— Age of inventory data in 5-year intervals —>									Unclassified	Total[a]
						Current	1 to 5 yr	6 to 10 yr	11 to 15 yr	16 to 20 yr	21 to 25 yr	26 to 30 yr	31 to 35 yr	36 to 40 yr		
						1986	1981-1985	1976-1980	1971-1975	1966-1970	1961-1965	1956-1960	1951-1955	1946-1950		
Nfld.	PR	Isl. Management	7640	1.3	1979		25	75								100
	PR	Lab. Management	318	0.1	1975				100							100
	PR	Isl. Global	3432	0.6	1967					87	2				11	100
	PR	Lab. Intensive	7102	1.2	1972				100							100
	PR	Lab. Extensive	17514	2.9	1972				100							100
N.S.	PR	3P	3542	0.6	1981		68	32								100
	PR	TSP	1871	0.3	1978			100								100
	CFS	FEDINV81	58	–	1966					74	21	2	2			99
	CFS	C.B.H. Nat. Pk.	95	–	1954								100			100
	CFS	3 DND	3	–	1972		40		22	21			16			99
P.E.I.	PR		575	0.1	1981		100									100
N.B.	PR	Recent	3471	0.6	1982		100									100
	CFS-d	NATINV81	3598	0.6	1975			54	46		1					101
	CFS	FEDINV81	177	–	1973			11	76		13					100
Que.	PR	2nd decennial	17756	2.9	1982		89	11	–	–						100
	CFS-d	BIOMASS84	49017	8.1	1984		100			–						100
	CFS-d	NATINV81	55201	9.1	1975			35	65	–						100
	CFS	FEDINV81	135	–	1976			93	6	–						100
Ont.	PR	F.R.I.	60136	9.9	1978	1	27	50	13	8	1	–			–	100
	CFS	FEDINV81	110	–	1972	37				6	52	6				101
	CFS	Petawawa	40	–	1983		83	17								100
Man.	PR	Township	40565	6.7	1975		30	19	20	25	7					101
Sask.	PR	Township	5219	0.9	1972			2	71	27	–		–	–		100
	PR	UTM	11652	1.9	1980		64	27	10	–						101
	PR	NTS - south	2434	0.4	1986	100										100
	PR	NTS - north	5443	0.9	1972			2	98							100
	CFS	P. Alb. Nat. Pk.	347	0.1	1968					100						100
	CFS-P	South Gap	2270	0.4	1980			100								100
	CFS-P	North Gap	9091	1.5	1969			63					36	–		99
Alta.	PR	Phase 3	38144	6.3	1975	–	13	56	20	1		–	3	7		100
	CFS-P	Gap	6899	1.1	1982		100									100
	CFS	FEDINV81	5338	0.9	1965	–		37	2	2	–	–	59			100
	CFS-d	NATINV81	1091	0.2	1951			–					100			100
B.C.	PR	Management	93432	15.4	1974		5	23	50	18	3					100
	CFS-d	NATINV81	1131	0.2	1982	60		26	14	–						100
Y.T.	CFS		48337	7.9	1984		99			1						100
N.W.T.	CFS	FEDINV81	105273	17.3	1973		–	40	37	8	4	4	5	–		99
		All inventories	608456	100.0	1976	–	29	28	30	8	2	1	2	–	–	100

[a] Totals may not add to 100 due to rounding.

PR: contributed by a province for the 1986 Inventory.
3P: 3P (Probability proportional to prediction) inventory.
TSP: Temporary Sample Plot inventory.
CFS: Canadian Forestry Service
FEDINV81: data from the 1981 Federal Forest Inventory.
–: too small to be expressed.
C.B.H. Nat. Pk.: Cape Breton Highlands National Park.
DND: Department of National Defence.
CFS-d: derived by the CFS from data contributed earlier by a province.
NATINV81: data from "Canada's forest inventory 1981" (Bonnor 1982).
BIOMASS84: data from "Inventory of forest biomass in Canada" (Bonnor 1985).
F.R.I.: Forest Resource Inventory.
Petawawa: CFB Petawawa and Atomic Energy of Canada, Chalk River Nuclear Laboratories.
UTM: Universal Transverse Mercator grid system.
NTS: National Topographic System.
P. Alb. Nat. Pk.: Prince Albert National Park.
CFS-P: a joint CFS and provincial inventory done for the 1986 inventory.

Table 3. Information available from Canada's Forest Inventory 1986

<—— Source inventories ——>			<—— Classifiers available ——>								<—— Volume data ——>				
											Utilization specifications <——>		<—— Species detail* ——>		
Province or territory	Inventory name	Data source	Ownership, status, land class	Site	Part. and fully stocked	Cause of dist.	Age	Maturity	Forest type	Predominant genus	Pulpwood	Sawwood	spp. group	spp. group & genera	conif. & brdl. subtot.
Nfld.	Isl. Man.	Management	1	1	1	1	1	1	1	1	1		1		
	Lab. Man.	Management	1	1	1	1	1	1	1	1	1		1		
	Isl. Glb.	Regional	1		1	1			1		1		1		
	Lab. Int.	Regional	1			1			1		1				1
	Lab. Ext.	Reconn.	1			1			1		1				1
N.S.	3P	Management	1	1			1	1	1		1	1	1		
	TSP	Management	1	1			1	1	1		1	1	1		
	FEDINV81	Reconn.	1	1	1	1		1	1						
	C.B.H.N.P.	Reconn.	1	1	1			1	1						
	3 DND	Reconn.	1	1	1			1	1						
P.E.I.		Management	1		1	1			1	1	1	1	1		
N.B.	Recent	Management	1		1	1	1	1	1	1	1	1	1		
	NATINV81	Management	1			1		1	1		1		1		
	FEDINV81	Management	1			1		1	1		1		1		
Que.	2nd decen.	Management	1			1	1	1	1	1	1		1		
	BIOMASS84	Management	1						1		1				
	NATINV81	Management	1			1		1	1		1			1	
	FEDINV81	Management	1			1		1	1		1			1	
Ont.	F.R.I.	Regional	1	1	1		1	1	1	1	1		1		
	FEDINV81	Reconn., Reg.,Man.	1			1		1	1		1				
	Petawawa	Reg., Man.	1	1	1			1	1	1	1		1		
Man.	Township	Management	1	1	1			1	1	1	1	1	1		
Sask.	Township	Reconn.	1			1		1	1		1		1		
	UTM	Management	1		1	1	1	1	1	1	1	1	1		
	NTS - S	Reconn.	1		1			1	1	1	1	1	1		
	NTS - N	Reconn.	1		1	1			1	1	1	1	1		
	P. Alb. N.P.	Reconn.	1					1	1						
	Gaps - N	Other	1	1	1			1	1	1	1				1
	Gaps - S	Other	1	1	1			1	1	1	1				1
Alta.	Manage.	Management	1	1	1	1	1	1	1	1	1	1	1		
	Gap	Other	1	1	1			1	1	1	1				1
	FEDINV81	Reconn.	1	1		1		1	1						
	NATINV81	Reconn.	1	1				1	1					1	
B.C.	Manage.	Management	1	1		1	1	1	1	1	1	1	1		
	NATINV81	Reconn.	1	1	1	1		1	1						
Y.T.		Reconn.	1	1	1	1		1	1		1	1	1		
N.W.T.		Reconn., Man., LANDSAT	1	1	1	1		1	1		1				1
Number of inventories			37	20	21	23	10	31	37	16	30	11	20	3	6
Per cent of area inventoried			100	70	57	71	39	86	100	49	99	41	56	9	24

* The species detail is the same for pulpwood and sawwood.

Isl. Man.: Island Management inventory.
Lab. Man.: Labrador Management inventory.
Isl. Glb.: Island Global inventory.
Lab. Int.: Labrador Intensive inventory.
Lab. Ext.: Labrador Extensive inventory.
Reconn.: Reconnaissance inventory.
3P: 3P (Probability proportional to prediction) inventory.
TSP: Temporary Sample Plot inventory.
FEDINV81: data from the 1981 Federal Forest Inventory.
C.B.H.N.P.: Cape Breton Highlands National Park.
DND: Department of National Defence.
NATINV81: data from "Canada's forest inventory 1981" (Bonnor 1982).
2nd decen.: 2nd decennial inventory.
BIOMASS84: data from "Inventory of forest biomass in Canada" (Bonnor 1985).
F.R.I.: Forest Resource Inventory.
Petawawa: CFB Petawawa and Atomic Energy of Canada, Chalk River Nuclear Laboratories.
UTM: Universal Transverse Mercator grid system.
NTS: National Topographic System.
P.Alb.N.P.: Prince Albert National Park.

3.0 Auxiliary data

3.1 Introduction

The reader is referred back to Chapter 2, Section 7.0, for a description of the classifiers. The present chapter deals with the availability of the data for those classifiers. With the exception of productivity (Bickerstaff et al. 1981), this is the first time these data have been compiled at a Canada-wide level.

The auxiliary data are not available in the present inventory for every province (Table 4). Of the area inventoried, productivity data are available for 100 per cent. In decreasing order of availability, the percentages are: cull, 61 per cent; policy constraint, 54 per cent; tree size-volume relationship, 18 per cent; and stocking mixture, 1 per cent. For only one province are all five of the files available. However, the lack of survey results should not be considered as an impediment to their use. Further statistics can be expected to be forthcoming after this report is printed. Some provinces were not able to provide their information because of difficulties in converting it to the form requested.

Tables 5 to 9 describe which classifiers and types of attributes are available for the auxiliary files. This information will be required for those planning to make queries against or using summaries from the database. Qualifiers such as the type of productivity data or the maturity classes used are also given. These data are applied to all the data even if there are a number of source inventories in a province.

3.2 Cull

Table 5 describes which classifiers are used. A maximum of two classifiers are used in any one province. Pulpwood cull factors are available for 64 per cent of the data. Furthermore, not all provinces were able to provide the data for mature and overmature records. In four provinces, all maturity classes are combined. This means that there is an underestimate of the cull in mature and overmature stands since younger stands are expected to have lower cull factors. In two provinces cull was available for mature records only.

Table 4. The general availability of information from the auxiliary files

Province or territory	Cull	Policy constraint	Productivity	Stocking mixture	Tree size-volume relationship
Nfld.			1		
N.S.	1	1	1	1	1
P.E.I.		1	1		1
N.B.	1	1	1		1
Que.	1	1	1		
Ont.	1	1	1		
Man.	1		1		
Sask.	1	1	1		
Alta.	1	1	1		
B.C.	...[a]		1		1
Y.T.	1	1	1		
N.W.T.	1	1	1		
Canada	61%[b]	54%	100%	1%	18%

[a] The main file data are expressed in net merchantable volume, therefore, cull figures do not apply.

[b] As a per cent of inventoried area.

Table 5. The availability of cull information

	Availability and differentiation of information						
	<— Classifiers				—>	Numerical attributes	
Province or territory	Geographic area	Site	Age	Maturity	Maturity classes used[a]	Pulpwood	Sawwood
Nfld.	..	..	..	..	..	..	..
N.S.	F.I.D.			1	Mature	1	
P.E.I.	..	..	..	..	..	..	..
N.B.	Resour. Regs.				All mat.	1	1
Que.	FMU				All mat.	1	
Ont.	Prov.			1	Mat&over	1	
Man.	FMU				All mat.	1	1
Sask.	Survey areas			1	Mat&over	1	
Alta.	Prov.		1		All mat.	1	1
B.C.[b]	..	..	..	..	..	..	..
Y.T.	Terr.			1	Mature	1	1
N.W.T.	..	..	..	..	..	..	..
% Canada[c]	..	0%	8%	25%		61%	24%

[a] The maturity class abbreviations are as follows:
Mature = mature only
Mat&over = Mature and overmature only;
All mat. = All maturity classes, regen. to overmature.
The availability of maturity (shown by a 1 in the Maturity column) combined with "Mat&over" for Ont. and Sask. means the information is available for each of the mature and overmature classes.

[b] The B.C. data are already expressed as net merchantable volume.

[c] Per cent of the inventoried area.

.. not available.

F.I.D.: Forest Inventory Divisions.
Resour.Regs.: Resource Regions.
FMU: Forest Management Units.

Table 6. The availability of policy constraint information

	Availability and differentiation of information				
	<— Classifiers		—>	Type of numerical attributes	
Province or Territory	Geographic area	Ownership	Status	Classes	Per cent
Nfld.	..	..	..	..	..
N.S.	F.I.D.	1	1		1
P.E.I.	Prov.	1	1		1
N.B.	Prov.			1	
Que.	FMU	1	1		1
Ont.	Prov.			1	
Man.	..	..	..	..	..
Sask.	Prov.	1	1	1	
Alta.	FMU	1	1	1	
B.C.	Prov.	..	..	..	..
Y.T.	Terr.	1	1	1	
N.W.T.	..	..	..	..	..
% Canada[a]		43%	43%	33%	21%
				<— 54%	—>

[a] Per cent of the inventoried area.

.. not available.

F.I.D.: Forest Inventory Divisions.
FMU: Forest Management Units.

Table 7. **The availability of productivity information**

		Availability and differentiation of information						
		<—— Classifiers ——>				Numerical attributes		
Province or territory	Source	Geographic area	Site	For. type	Pred. genus	Conif. /decid.	Undif- ferent.	Type of data
Nfld.	Bick.	For. Sect.					1	MAIr
N.S.	Province	F.I.D.	1	1		1		PAI
P.E.I.	Province	Prov.					1	MAIr
N.B.	Bick.	For. Sect.					1	MAIr
Que.	Bick.	For. Sect.					1	MAIr
Ont.	Bick.	For. Sect.					1	MAIr
Man.	Province	Prov.		1	1	1		MAIr
Sask.	Province	Survey area		1	1	1		MAIr
Alta.	Province	Prov.	1	1	1		1	MAIr
B.C.	Province	FIZ	1	1	1		1	MAIr
Y.T.	Bick.	For. Sect.					1	MAIr
N.W.T.	Bick.	For. Sect.					1	MAIr
% Canada[a]			25%	37%	36%	14%	86%	

[a] Per cent of the inventoried area.

Bick.: Bickerstaff, A.; Wallace, W.L.; Evert, F. 1981. "Growth of forests in Canada. Part 2."

For. Sect.: Forest Sections as described in Rowe, J.S. 1972. "Forest regions of Canada."

MAIr: Mean annual increment at rotation age.

F.I.D.: Forest Inventory Divisions.

PAI: Periodic annual increment.

FIZ: Forest Inventory Zones.

Table 8. **The availability of stocking mixture information**

	Availability and differentiation of information			
	<—— Classifiers ——>			<——>
Province or territory	Geographic area	Site	Cause of disturbance	Numerical attributes
Nfld.	..	..	..	
N.S.	F.I.D.			1
P.E.I.	..	..	..	
N.B.	..	..	..	
Que.	..	..	..	
Ont.	..	..	..	
Man.	..	..	..	
Sask.	..	..	..	
Alta.	..	..	..	
B.C.	..	..	..	
Y.T.	..	..	..	
N.W.T.	..	..	..	
% Canada[a]		0%	0%	1%

[a] Per cent of the inventoried area.

.. not available.

F.I.D.: Forest Inventory Divisions.

Table 9. **The availability of tree size-volume relationship information**

	Availability and differentiation of information								
	<——— Basis ———>		<——— Classifiers ———>						
Province or territory	Stocking table or equations	Diameter classes of stocking table	Geographic area	Site	Stocking	Age	Maturity	Maturity classes used[a]	Species group
Nfld.	..	..	..	..	..	..	..		..
N.S.-3P	table[b]	2 cm, to 22[c]	F.I.D.(W&C)	1			1	Mat&over	1
N.S.-TSP	table[b]	2 cm, uncensored[d]	F.I.D.(E)					Mat&over	1
P.E.I.	table[b]	2 cm, to 34	Prov.					All mat.	1
N.B.	table[e]	2 cm, to 38	Res. Rgn.					All mat.	1
Que.	..	..	..	..	..	..	..		..
Ont.	..	..	..	..	..	..	..		..
Man.	..	..	..	..	..	..	..		..
Sask.	..	..	..	..	..	..	..		..
Alta.	..	..	..	..	..	..	..		..
B.C.	equations[b]	..	FIZ[f]	1	1	1	1	Mat&over	1
Y.T.	..	..	..	..	..	..	..		..
N.W.T.	..	..	..	..	..	..	..		..
% Canada[g]				16%	16%	16%	16%		18%

[a] The maturity class abbreviations are as follows:
Mat&over = Mature and overmature only;
All mat. = All maturity classes, regeneration to overmature.

[b] unpublished figures

[c] to 22 cm means the upper class is 22 and greater

[d] uncensored means that all classes are available in the stock table

[e] Table 9 in Dept. of Natural Resources, "New Brunswick forest inventory" 1981

[f] provided for 3 regions, but the data is stored in the data base for each Forest Inventory Zone (FIZ) as follows: coast (FIZ A to C); southern interior (FIZ D to H); and northern interior (FIZ I to L)

[g] per cent of the inventoried area

.. not available

3P: 3P (Probability proportional to prediction) inventory
F.I.D.: Forest Inventory Divisions for eastern or the combined western and central divisions
TSP: Temporary Sample Plot inventory
Res. Rgn.: Resource Region

3.3 Policy constraint

Table 6 shows that the policy constraint data are available for 54 per cent of the main attribute data set. In more than half of the provinces, the policy constraint factor is available as a class, instead of a percentage.

3.4 Productivity

Table 7 describes which classifiers and numerical attributes are available. Productivity data are available for all provinces and territories. In one province all four classifiers are used. Most (86 per cent) of the data are not differentiated into species.

3.5 Stocking mixture

Table 8 describes the availability of the stocking mixture auxiliary data. These data are available for one province (one per cent of the data by area). The site and cause of disturbance classifiers are not used.

3.6 Tree size-volume relationship

Table 9 describes the sources for these data and which classifiers they are available by. In four provinces the data came from stocking tables. In one province the data were provided as Weibull parameters. The tree size-volume relationship is available for 18 per cent of the data.

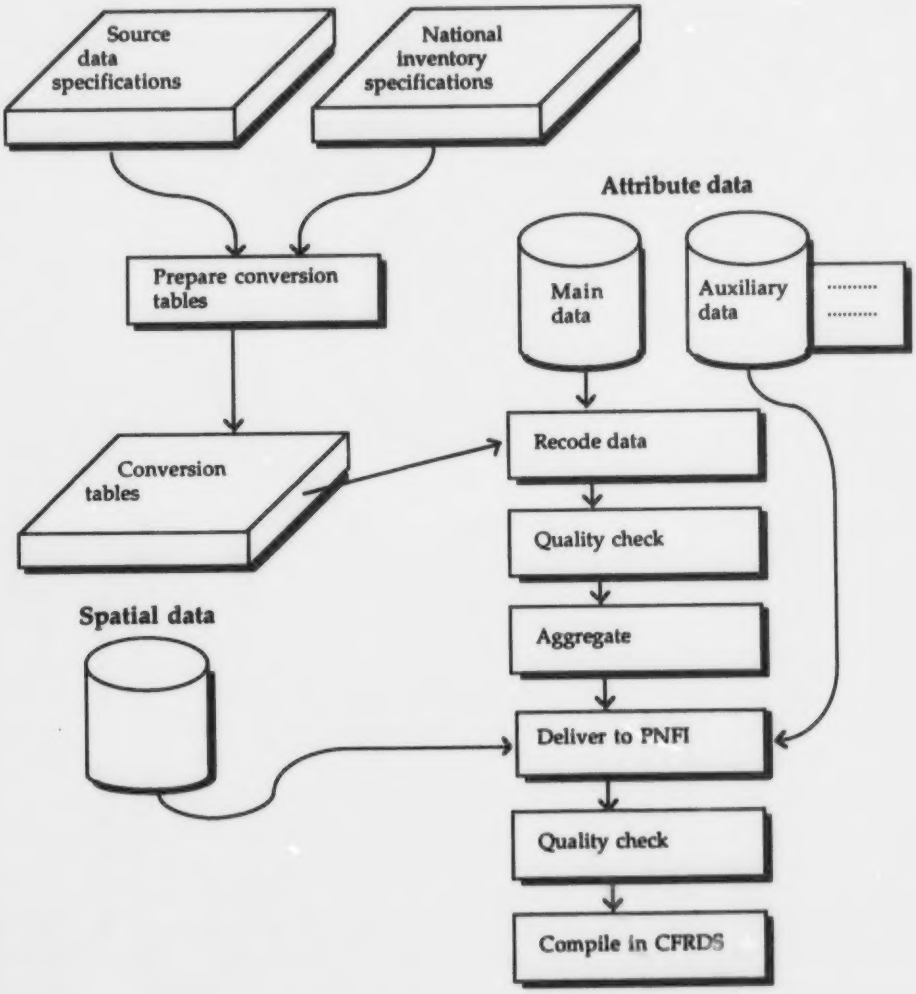
Not all provinces were able to provide the data for mature and overmature records. In two provinces, all maturity classes were combined. This means that there is overrepresentation of the smaller diameter trees compared to the provinces where only mature and overmature trees are described. In three provinces, the data are available for mature and overmature records.

CHAPTER 4 Data preparation

The preparation of the attribute and spatial data for inclusion in the CFRDS involves the steps shown in Figure 7. The attribute data were recoded, then aggregated, and finally quality checked. The spatial data were digitized and quality checked. When data passed the quality check they were accepted as part of the CFRDS.

1.0 Recoding source inventory data to 1986 format

Prerequisites for combining a number of different inventories were a standardized terminology and Canada-wide coding specifications.



Source data specifications
National inventory specifications
Attribute data
Prepare conversion tables
Main data
Auxiliary data
....
....
Recode data
Conversion tables
Quality check
Spatial data
Aggregate
Deliver to PNFI
Quality check
Compile in CFRDS

Figure 7. Major steps in preparing the attribute data for Canada's forest inventory 1986.

The source inventories provide more information than is necessary at the national level. In order to link the source and national inventory specifications, tables (referred to here as conversion tables) containing the national inventory classes for each classifier and the corresponding source inventory classes (see Appendix 1) were constructed for each data source.

As well, conversion tables help users of the inventory to understand the data in a provincial context. These conversion tables will also be used for the 1991 inventory, because the 1986 national specifications will not change until after the 1991 national inventory.

The conversion tables were constructed to provide the best possible fit of the source inventory to national specifications, and to fill in missing classifiers or classes only with codes acceptable to managers of the source inventory. So, while steps were taken to minimize differences among the source inventories, significant differences remain that the users of the data may have to address (see Chapter 5).

Stand-level source data typically consist of about 500 records per map sheet or cell (see Figure 8). This information is very detailed, containing classifiers not appropriate at the national level, such as height class or slope. When the stand-level data were recoded to the national format using conversion tables, the average number of records with an unique combination of classifiers per cell was reduced to about 30.

2.0 Quality check and aggregation of recoded data.

After the source data were recoded to national specifications, they were checked for the following:

- blank records
- invalid characters
- range errors (data numbers out-of-range)
- inconsistent coding (codes for certain classifiers are related)
- sequence errors (data for a cell is missing)
- cell areas out-of-range (area of a cell in the data is not within some specified range of the master cell list area)
- volume of a record (in cubic metres per hectare) exceeding the maximum volume expected
- unexpected species (volume data for a species are not expected in an area) and,
- pulpwood volume less than sawwood volume.

For each source of inventory these error checks were different. For instance, codes that might be relationally incorrect for one inventory source can be acceptable for another, or different classifiers may be unexpected, and so on. These differences in the error checks for different inventory sources required modification of the quality check software and parameters, so that, for each source of inventory, only those errors that actually are errors (not the result of checking for the wrong codes) are reported.

When the data were error-free they were aggregated to the cell level. The aggregation software combines records with the same classifiers within a cell, and thereby merges the individual stands of the source inventory. The areas are summed and the volumes are weighted by area:

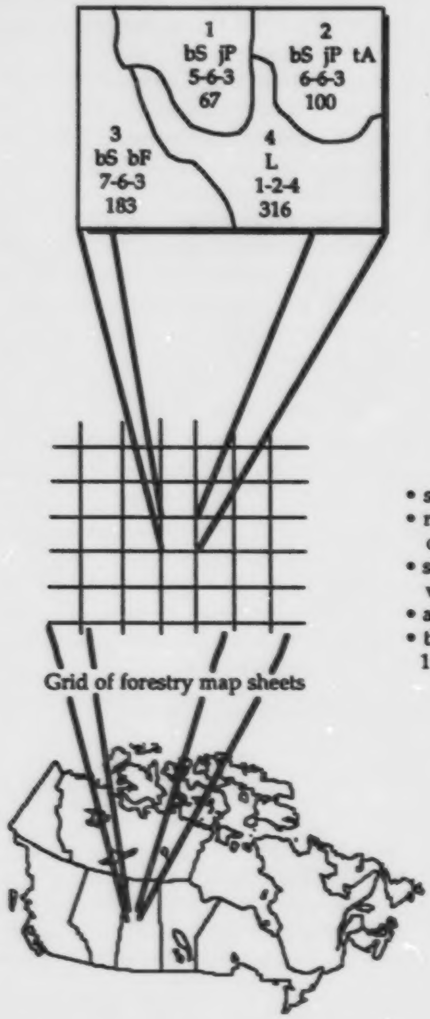
$$V3 = (A1*V1 + A2*V2)/(A1+A2);$$

where A1 and A2 are the areas of the first and second records, V1 and V2 are the volumes for a species group of the first and second records, and V3 is the average volume for a species group for an aggregated record.

The resulting file has one record only for each unique combination of classifiers occurring in the cell. The quality checked and aggregated data set was then delivered to PNFI, where a second quality check was carried out. If any errors occurred the data were sent back to be corrected.

In order that all data could be mapped and all cells would have data, a quality check of the spatial database was done at PNFI. For this check, the cells in the spatial database were compared to the master cell list, because the latter is a record of all the cells for which there are data. The final attribute and spatial databases were entered into the CFRDS.

The auxiliary data were delivered to PNFI in all but one case as hard copy (not a computer file).



Stand-level records

- smallest geographic units are stands
- records represent individual stands
- about 500 records per map sheet
- displayed at 1:10 000 to 1:20 000 scale

Records in Canada's Forest Inventory

- smallest geographic units are cells, not stands
- recoded to a Canada-wide scheme and some classifiers dropped
- stands aggregated to add areas and average volume; this would result in fewer records
- about 30 records per cell
- the information is displayed at 1:5 000 000 to 1:10 000 000

Figure 8. The results of recoding and aggregating a stand inventory to the national format.

They were coded and entered into the computer, quality checked, and then entered into the CFRDS. The auxiliary spatial data were digitized and stored in the CFRDS. Figure 9 shows these two major data sets contributing to the CFRDS.

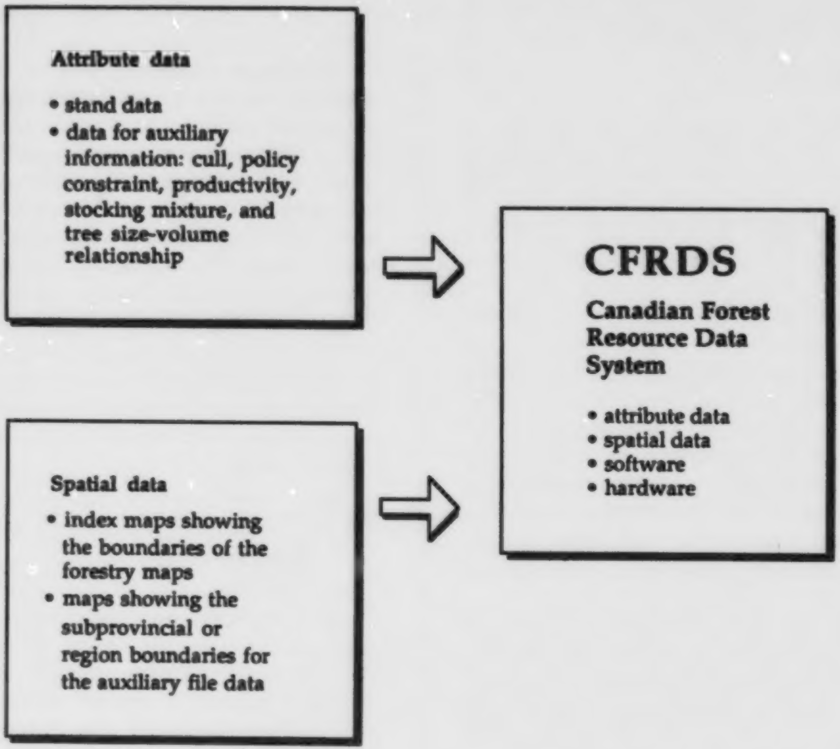

Attribute data
• stand data
• data for auxiliary information: cull, policy constraint, productivity, stocking mixture, and tree size-volume relationship
Spatial data
• index maps showing the boundaries of the forestry maps
• maps showing the subprovincial or region boundaries for the auxiliary file data
CFRDS
Canadian Forest Resource Data System
• attribute data
• spatial data
• software
• hardware

Figure 9. Creation of the 1986 inventory data: a generalized flowchart.

CHAPTER 5 Precautions in using data

1.0 Introduction

This chapter describes situations where figures reported in "Canada's forest inventory 1986" and other forest inventory reports may be under- or overestimated. Users of the data must be aware of these situations.

2.0 Unavailable data

There are a number of different reasons for data being unavailable. Most of Canada's commercial forest zone is inventoried. There are still some areas of marginally commercial or noncommercial forest not included. These are in northwestern Ontario, northern Manitoba, northeastern Saskatchewan, and some private holdings on Vancouver Island.

Chapter 3 describes situations where classifiers and numerical attributes are not available. Such missing data situations result in underestimates. For example, some inventories do not have age class data or sawwood volumes. The users of tabular summaries are advised of these cases through the reporting of statistics in rows or columns labelled unclassified. Thematic maps minimize any distortion by showing only the classified portions of the data or, where the information is entirely missing, showing this fact.

In some additional but minor situations classes within a classifier can be missing. For example, not all ownership or cause of disturbance classes are used (see Appendix 1).

3.0 Incompatible data

Some source inventories had classifications that were not compatible with the national format. Some data could be recoded into a more detailed class while other data were recoded into a more general class. This results in under- and overestimates for some classes. For example, unquantified stocked may be used, resulting in lower figures for partially or fully stocked area. Similarly, volume may be reported in three increasingly generalized groupings: by species groups, genus, coniferous subtotal, or broad-leaved subtotal.

For some classifiers, notably site, age and maturity, source inventories have cases where values are grouped at the right-hand end of a series (referred to as right-censored data), for example, age 81 years and older. This results in overestimates for the last class in the series. There is a corresponding underestimate in the class or classes not utilized. Left-censored data occurs less frequently; for example, the immature maturity class may include regeneration.

The age of the forest may not be directly comparable between records. The age of the forest is as of the year of information, which can vary between records.

4.0 Different utilization specifications for volume

There are no uniform standards for pulpwood or sawwood volumes in Canada. This reflects the independence of the source inventories which were designed to suit the regional variance in tree size and mill requirements. The different standards result in relative differences in the volume figures. For example, minimum diameters at breast height range from 7 to 17.5 cm and one province's figures are provided in net volumes rather than gross volumes. The utilization specifications are described in detail in Appendix 6.

These differences could be diminished by adjustments such as the use of the tree size-volume relationship or using the 1984 Biomass data set instead of the forest inventory data set.

5.0 Applications using auxiliary data

Any combination of main and auxiliary data has reduced meaning below the resolution of the coarsest component. Summaries at the cell level misleadingly imply a precision intended to be at the regional or broader levels.

The large size of the geographic areas used in the auxiliary files can result in under- and overstatements when such data are viewed at the cell level. Auxiliary data are only available for large areas, typically a whole province. In the case of tree size-volume relationships and productivity, summaries for northern areas would overstate the true situation and for southern areas would understate the same.

Caution is advised in the analysis of combined main and auxiliary data. Such data summaries would only show relevant differences when the summarizing classifiers are the same as the linkage classifiers.

All auxiliary data pertain to the year in which the information was gathered. There is a potential concern with the assumption that the situation has not changed between the time of collection of the auxiliary data and the inventory year of information. Projection from the known base date is a matter for users to contend with.

6.0 Other sources of variation

The average age of information differs among the source inventories. Older data may no longer reflect the current situation due to changes in the forest (accretion, growth, as well as depletions such as fire). The older age of information may also reflect different technology and specifications.

As with any survey based on sampling, the values obtained are only estimates. The users should also be aware that each component source inventory has biases and errors. A separate report (Gillis and Edwards 1988) describes how volume is compiled in Canada, and refers to potential biases. Increasingly, more accuracy and precision should be expected from management inventories compared to regional and reconnaissance inventories.

No attempt has been made to compile the sampling errors of the source inventories. The biases are not known and, while some may balance each other, the biases could still be significant. However, the sampling error should be low for such a large aggregation of data.

ACKNOWLEDGMENTS

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Appendix 1. Recoding of source inventories to the national format

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Canada's Forest Inventory 1986 (NATINV86)
Appendix 1. Conversion table for cells

<table>
<tr><th>Province/ territory</th><th>Name of inventory</th><th>Type of forestry map sheet</th><th>Description of mapsheets in province/territory</th><th>Description of cells in NATINV86</th><th>Key to the coding for the subdivision of maps</th></tr>
<tr><td>Newfoundland</td><td>Island management inventory (excluding Unit 14)</td><td>Lat./long. quadrangle</td><td>60-32:
60, Nfld. code for NTS sheet 12H/03; then sheet 32 (3 from 1 to 4 north, 2 from 1 to 4 east)</td><td>IM12H036: I for island;
M for management;
NTS sheet 12H/03; sheet 6 of 8 sheets numbering from bottom right</td><td>+ — + — + — + — +
| 5 | 6 | 7 | 8 |
+ — + — + — + — +
| 4 | 3 | 2 | 1 |
+ — + — + — + — +</td></tr>
<tr><td>Newfoundland</td><td>Island management inventory (Unit 14 only Stephenville vicinity)</td><td>Lat./long. quadrangle</td><td>80-11:
80, Nfld. code for NTS sheet 12B/10; then sheet 11 of 12 sheets numbering in a 2-column zigzag from the upper left corner</td><td>IS12B10B: 1 for island;
S for Stephenville;
NTS sheet 12B/10; sheet 11 of 12 sheets numbering in a 2-column zigzag from upper left, 1 to 9, A(=10), B(=11), and C(=12)</td><td>+ — + — + — + — +
| 1 | 2 | B | C |
+ — + — + — + — +
| 4 | 3 | A | 9 |
+ — + — + — + — +
| 5 | 6 | 7 | 8 |
+ — + — + — + — +</td></tr>
<tr><td>Newfoundland</td><td>Labrador management inventory</td><td>Lat./long. quadrangle</td><td>287-6:
287, Nfld. code for NTS sheet 13F/07; then sheet 6 of 8 sheets numbering from right</td><td>L092876:
L09 for Labrador; map sheet 287; sheet 6 of 8 sheets numbering from the bottom right</td><td>+ — + — + — + — +
| 5 | 6 | 7 | 8 |
+ — + — + — + — +
| 4 | 3 | 2 | 1 |
+ — + — + — + — +</td></tr>
<tr><td>Newfoundland</td><td>Island global inventory</td><td>Lat./long. quadrangle</td><td>123-7:
123, Nfld. code for NTS sheet 11P/13; then sheet 7 of 8 sheets numbering from the bottom right</td><td>IG11P137: I for island;
G for the global inventory;
NTS sheet 11P/13; sheet 7 of 8 sheets numbering from the bottom right</td><td>+ — + — + — + — +
| 5 | 6 | 7 | 8 |
+ — + — + — + — +
| 4 | 3 | 2 | 1 |
+ — + — + — + — +</td></tr>
<tr><td>Newfoundland</td><td>Labrador intensive inventory</td><td>Lat./long.quadrangle</td><td>406-5:
406, Nfld. code for NTS sheet 13C/01; then sheet 5 of 8 sheets numbering from the bottom right</td><td>L09406:
L09 for Labrador; map sheet 406</td><td></td></tr>
<tr><td>Newfoundland</td><td>Labrador extensive inventory</td><td>Lat./long. quadrangle</td><td>98:
98, Nfld. code for NTS sheet 13N/13;</td><td>L09098:
L09 for Labrador; map sheet 098</td><td></td></tr>
<tr><td>Nova Scotia</td><td></td><td>County or subcounty</td><td>111: Dept. of Lands and Forests code</td><td>Same as the province</td><td></td></tr>
</table>

		Description of cells in NATINV86						
			Dimensions					
Province/ Territory	Name of inventory	Size relative to 1:50,000 NTS maps	Minutes of lat. x long.	N-S (km)	E-W (km)	Average area of a whole cell (km^2)	Range of cell codes[a]	Number of cells
Newfoundland	Island management inventory (excluding Unit 14)	1/8 1/16	7.5 x 7.5 3.75 x 7.5	13.9 7.0	8.7-9.5 8.7-9.5	121-133 61.66	IM01K131 to IM12P088	696
Newfoundland	Island management inventory (Unit 14 only Stephenville vicinity)	1/12	5 x 7.5	9.3	9.2-9.5	85-88	IS11O112 to IS12B165	117
Newfoundland	Labrador management	1/8	7.5 x 7.5	13.9	8.2-8.4	115-117	L092631 to L092648 L092871 to L092888	16 16
Newfoundland	Island global inventory	1/8 1/16	7.5 x 7.5 3.75 x 7.5	13.9 7.0	8.7-9.5 8.7-9.5	121-133 61-66	IG01K115 to IG12P092	451
Newfoundland	Labrador intensive inventory	1	15 x 30	27.8	31.3-34.2	871-953	L09152 to L09406	86
Newfoundland	Labrador extensive inventory	1	15 x 30	27.8	31.3-34.2	871-953	L09094 to L09429	236
							Nfld. Isl. subtotal Nfld. Labr. subtotal	813 354
							Nfld. total	1167
Nova Scotia		~2.2	...	...	...	2216	TSP: 411 to 636 3-P: 111 to 324 and 711 to 744 also SABLE	11 9 4 1
							N.S. total	25

NTS: National Topographic System.

[a] Capital letters are used exclusively for the cell codes.

...Not appropriate or not applicable.

Province/ territory	Name of inventory	Type of forestry map sheet	Description of mapsheets in province/territory	Description of cells in NATINV86	Key to the coding for the subdivision of maps
Prince Edward Island		UTM square	3916: easting 39; northing 16 (easting and northing to 10 km, northing coding does not include 5000 km since this is constant throughout the province)	2039516: zone 20; easting 39; and northing 516 (easting and northing in 10 km)	
New Brunswick	Inventories using the 5'x10'maps	Lat./long. quadrangle	551: a Min. of Natural Resources code for a lat./ long. quadrangle	A551: "A" for the 5'x10' inventory; "551" for the Min. of Natural Resources code	
New Brunswick	Inventories using the 6'x6' maps	Lat./long. quadrangle	1134: a Min. of Natural Resources code for a lat./ long. quadrangle	B1134: "B" for the 6'x6' inventory; "1134" for the Min. of Natural Resources code for the more northern map of two 3' x 6' maps paired north-south	
Québec	1st decennial inventory	Lat./long. quadrangles, and other shapes	108: zone 1; map 08 or 2411: zone 24; map 11 (no leading zero on the zone numbers less than 10)	00108 or 02411: Similar to the province but with leading zeros	
Québec	1st decennial inventory (Eastern Townships)	Watershed portion	20300: provincial code	Same as the province	
Québec	Biomass inventory (northern Québec)	UTM square	18UXS: 18U, the UTM zone and quadrilateral; XS, the 100 km UTM block designation	Same as the province	+ — + — + — + — + | WT | XT | CN | DN | + — + — + — + — + | WS | XS | CM | DM | + — + — + — + — + | WR | XR | CL | DL | + — + — + — + — +
Québec	2nd decennial inventory	Lat./long. quadrangle	21E04-200-0101: NTS sheet 21E/04; 200-for a 1:20,000 map scale; sheet 0101 of 4 (0101, 0102, 0201 or 0202 for the SW, SE, NW, and NE corners respectively)	21E04SW: NTS sheet 21E/04; then sheet SW of 4 (NE, SE, SW, and NW)	+ — + — + | NW | NE | + — + — + | SW | SE | + — + — +

UTM: Universal Transverse Mercator grid.

		Description of cells in NATINV86						
			Dimensions					
Province/ Territory	Name of inventory	Size relative to 1:50,000 NTS maps	Minutes of lat. x long.	N-S (km)	E-W (km)	Average area of a whole cell (km²)	Range of cell codes	Number of cells
Prince Edward Island		~1/9	...	10	10	100	2039516 to 2057514	101
New Brunswick	Inventories using the 5′ x 10′ maps	1/9	5 x 10	9.3	12.4-13.1	115-122	A001 to A686	424
New Brunswick	Inventories using the 6′ x 6′ maps	2/25 1/25	6 x 6 3 x 6	11.1 5.6	7.5-7.8 7.5-7.8	83-87 42-43	B0010 to B1599	477
							N.B. total	901
Québec	1st decennial inventory	1[b] 1 1 2	15 x 30 30 x 15 7.5 x 60 30 x 30	27.8 55.6 13.9 55.6	33.5-38.6 17.8-19.3 70.1-74.5 33.6	931-1074 992-1071 975-1036 1868	00101 to 04212	614
Québec	1st decennial inventory (Eastern Townships)	...	...	...	...	50-80	20300 and 20500	2
Québec	Biomass inventory (northern Québec)	~11	...	100	100	10,000	17UNL to 20VMV	86
Québec	2nd decennial inventory	1/4	7.5 x 15	13.9	17.9-19.7	249-274	21E02NW to 32J10SE	745
							Qué. total	1447

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[b] most cells are 15′ x 30′.

Province/ territory	Name of inventory	Type of forestry map sheet	Description of mapsheets in province/territory	Description of cells in NATINV86	Key to the coding for the subdivision of maps
Ontario	Unsurveyed lands	Lat./long. quadrangle	443754: north of 44 degrees lat., sheet 3 of 8; and west of 75 degrees long., sheet 4 of 4	Same as the province	444761 444754 444753 443761 443754 443753 442761 442754 442753
Ontario	Surveyed lands	Townships, blocks and other land parcels	000010: Min. of Natural Resources township code	Same as the province	
Ontario	Some other federal and native lands	Various Indian reserves, blocks and other parcels	...	0BL05: PNFI code	
Manitoba	Township	Township	01-02-E1: township 1; range 02; east of the 1st meridian	1E00102: east of the 1st meridian; township 001 (north); and range 02 (east)	
Saskatchewan	UTM inventory	UTM square	1257548: zone 12; easting 57; and northing 548 (easting and northing to 10 km)	Same as the province	
Saskatchewan	Township inventory	Township	67-18-W3: township 67; range 18; west of the 3rd meridian	3W06718: west of the 3rd meridian; township 067 (north); and range 18 (west)	
Saskatchewan	NTS - North inventory	Lat./long. quadrangle	74B01NW: NTS sheet 74B/01; sheet NW of 4 labeled NE, SE, SW or NW	Same as the province	NW NE SW SE
Saskatchewan	NTS - South inventory	Lat./long. quadrangle	73F01: NTS sheet 73F/01	Same as the province	
Saskatchewan	Gap inventories	Irregular	...	SNGAP, SSGAP: PNFI codes	

Province/ Territory	Name of inventory	Description of cells in NATINV86						
			Dimensions					
		Size relative to 1:50,000 NTS maps	Minutes of lat. x long.	N-S (km)	E-W (km)	Average area of a whole cell (km^2)	Range of cell codes	Number of cells
Ontario	Unsurveyed lands	1/4	7.5 x 15	13.9	17.1-18.3	238-254	453814 to 523941	1219
Ontario	Surveyed lands	~1/9	...	9.7	9.7	93	000010 to 032420	2351
		or ~1/5	...	14.5	14.5	210		
		or other	...	...	...	50-200		
Ontario	Some other federal and native lands	...	...	...	...	50-200	0BL05 to 0RS710	17
							100011 to 100082	12
							and 900000	1
							Ont. total	3600
Manitoba	Township	~1/9	...	9.7	9.7	93	1E00101 to 1E08809	1629
							1W00101 to 1W10008	2597
							2E05201 to 2E06807	94
							Man. total	4320
Saskatchewan	UTM inventory	~1/9	...	10	10	100	1256595 to 1432587	1329
Saskatchewan	Township inventory	~1/9	...	9.7	9.7	93	1W06630 to 1W08130	17
							2W06601 to 2W08126	288
							3W05301 to 3W09225	368
								673
Saskatchewan	NTS - North inventory	1/4	7.5 x 15	13.9	14.8-15.6	206-217	64D01NE to 64E16SW	128
							74A01NE to 74B16SW	128
								256
Saskatchewan	NTS - South inventory	1	15 x 30	27.8	32.5-33.5	904-931	73F01 to 73K08	41
Saskatchewan	Gap inventories	...	...	...	...	90,908	SNGAP and SSGAP	2
						22,701		
							Sask. total	2301

<table>
<tr><th>Province/ territory</th><th>Name of inventory</th><th>Type of forestry map sheet</th><th>Description of mapsheets in province/territory</th><th>Description of cells in NATINV86</th><th>Key to the coding for the subdivision of maps</th></tr>
<tr><td>Alberta</td><td>Phase 3 inventory</td><td>Township</td><td>001-27-W4: township 001; range 27; west of the 4th meridian</td><td>4W00127: west of the 4th meridian; township 001 (north); and range 27 (west)</td><td></td></tr>
<tr><td>Alberta</td><td>Gap inventory</td><td>Irregular</td><td>...</td><td>ASGAP: PNFI code</td><td></td></tr>
<tr><td>British Columbia</td><td>Inventory on 6' x 12' maps</td><td>Lat./long. quadrangle</td><td>082K022: 1:250,000
NTS sheet 082K; sheet no. 02 north; sheet 2 east</td><td>Same as the province</td><td>+— +— + ... +— +
| 091 | 092 | ... | 100 |
081	082	...	090
...	...	...	...
021	022	...	030
011	012	...	020
001	002	...	010 | + — + — + ... + — +</td></tr>
<tr><td>British Columbia</td><td>Inventory on 7.5' x 7.5' maps</td><td>Lat./long. quadrangle</td><td>082E01A: NTS sheet 082E/01; sheet A of 8 number adding from the bottom right</td><td>Same as the province</td><td>+ — + — + — + — + | E	F	G	H | + — + — + — + — + | D	C	B	A | + — + — + — + — +</td></tr>
<tr><td>British Columbia</td><td>Inventory on 15' x 15' maps</td><td>Lat./long. quadrangle</td><td>094F08E: NTS sheet 094F/08; sheet E of 2 labeled E for east or W for west</td><td>094F08N: Same as the prov. but labeled N for east</td><td>+——————+——————+ 		
W	N
		 +——————+——————+</td></tr>
<tr><td>Yukon Territory</td><td></td><td>UTM square</td><td>075056680: zone 07; easting 505; and northing 6680 (easting and northing to 5 km)</td><td>0750668: zone 07; easting 50; and northing 668 (easting and northing to 10 km)</td><td></td></tr>
<tr><td>Northwest Territories</td><td></td><td>UTM square</td><td>...</td><td>0843750: zone 08; easting 43; and northing 750 (easting and northing to 10 km)</td><td></td></tr>
</table>

		Description of cells in NATINV86						
			Dimensions					
Province/ Territory	Name of inventory	Size relative to 1:50,000 NTS maps	Minutes of lat. x long.	N-S (km)	E-W (km)	Average area of a whole cell (km^2)	Range of cell codes	Number of cells
Alberta	Phase 3 inventory	~1/9	...	9.7	9.7	93	4W00127 to 4W12623 5W00101 to 5W12623 6W03901 to 6W12612	1566 2409 957
Alberta	Gap inventory	...	...	...	...	68,995	ASGAP	1
							Alta. total	4933
British Columbia	Inventory on 6' x 12' maps	4/25	6 x 12	11.1	14.3-14.6	159-163	082E031 to 104B020	2287
British Columbia	Inventory on 7.5' x 7.5' maps	1/8	7.5 x 7.5	13.9	7.0-9.1	97-127	082E01A to 104H03H	5211
British Columbia	Inventory on 15' x 15' maps	1/2	15 x 15	27.8	14.3-18.2	399-507	092M13N to 114P16W	712
							B.C. total	8210
Yukon Territory		~1/9	...	10	10	100	0750668 to 1045665	5161
Northwest Territories		~1/9	...	10	10	100	0843750 to 1540667	11006
							Canada	43156

Conversion table for Newfoundland

Province or territory	<<——NATINV86 Data Source——>>							
	<——Inventory type——>							
	Reconnaissance	Regional	Management	Operational	CLI	Satellite	Other	Missing value
Newfoundland Management			All records					
Labrador Management			All records					
Newfoundland Global		All records						
Newfoundland Labrador intensive		All records						
Newfoundland Labrador extensive	All records							

Conversion table for Nova Scotia

Province or territory	<<— NATINV86 Data Source							—>>
	<— Inventory type			—>				
	Reconnaissance	Regional	Management	Operational	CLI	Satellite	Other	Missing value
Nova Scotia 3P inventory (eastern and central counties)			All other records				Other	Uninventoried areas
Nova Scotia temporary sample plot inventory (western counties)			All records					Uninventoried areas
Nova Scotia FEDINV81 - from the Nova Scotia temporary sample plot inventory maps (1965 to 1971)	All records							
Nova Scotia FEDINV81 - from 1954 CFS Forest Management Institute map	All records							
Nova Scotia FEDINV81 - from CFS Forestry Statistics and Systems Branch photo reconnaissance	All records							

CFS: Canadian Forestry Service

Conversion table for Prince Edward Island and New Brunswick

Province or territory	<< NATINV86 Data Source >>							
	<— Inventory type —>							
	Reconnaissance	Regional	Management	Operational	CLI	Satellite	Other	Missing value
Prince Edward Island			All records					
New Brunswick New inventory			All records					
New Brunswick NATINV81			All records					
New Brunswick FEDINV81			All records					

Conversion table for Québec

Province or territory	<<— NATINV86 Data Source							—>>
	<— Inventory type			—>				
	Reconnaissance	Regional	Management	Operational	CLI	Satellite	Other	Missing value
Québec 2nd decennial			All records					
Québec BIOMASS84	All records							
Québec NATINV81			All records					
Québec FEDINV81	Some non-forest and water		All other records					

Conversion table for Ontario and Manitoba

Province or territory	<<——NATINV86 Data Source——>>							
	<——Inventory type——>							
	Reconnaissance	Regional	Management	Operational	CLI	Satellite	Other	Missing value
Ontario Forest Resource Inventory		All records						
Ontario FEDINV81	Reconnaissannce	Regional						Uninventoried areas
Ontario CFB Petawawa, PNFI, and AECL	AECL	CFB Petawawa* PNFI*						
Manitoba			All records					

*These inventories should have been coded in NATINV86 as management.

Conversion table for Saskatchewan

Province or territory	<<—— NATINV86 Data Source							——>>
	<—— Inventory type			——>				
	Reconnaissance	Regional	Management	Operational	CLI	Satellite	Other	Missing value
Saskatchewan TWP	Reconnaissance		All other records					Undetermined data source
Saskatchewan UTM			All records					Undetermined data source
Saskatchewan NTS-N	All records							
Saskatchewan NTS-S	All records							
Prince Albert National Park	All records							
Saskatchewan North Gap							All records	
Saskatchewan South Gap							All records	

Conversion table for Alberta

Province or territory	NATINV86 Data Source							
	Inventory type							
	Reconnaissance	Regional	Management	Operational	CLI	Satellite	Other	Missing value
Alberta Management			All other records					Undetermined data source
Alberta Gap							All records	
Alberta FEDINV81	All records							
Alberta NATINV81 for FMU-A13 and Fishing Lake Metis Settlement	All records							

Conversion table for British Columbia/Yukon Territory/Northwest Territories

Province or territory	<<— NATINV86 Data Source —>>							
	<— Inventory type —>							
	Reconnaissance	Regional	Management	Operational	CLI	Satellite	Other	Missing value
British Columbia Management			All records					
British Columbia NATINV81	Reconnaissance							Undetermined data source
Yukon Territory	All records							
Northwest Territories	Reconnaissance		Management			Landsat		

Conversion table for Newfoundland

Province or territory	NATINV86OwnershipClass							
	Federal		Provincial/ territorial	Private				Missing Value
	Other Federal	Native		Industrial	Nonindustrial	Municipal	Unspecified private	
Newfoundland Management	Federal reserves (Gander and Stephenville Department of Transportation only)		Bowaters licence (now Corner Brook Pulp and Paper) Newfoundland crown Newfoundland reserve Price charter Price license (now Abitibi-Price) Price license (short term)	Bowaters private Price private	Private land Residential area	Municipality		Fresh water in areas where ownership cannot be defined Municipal control area (Units 5 and 14 only)
Labrador Management			Newfoundland government crown					
Newfoundland Global	Canadian government		Bowaters lease Newfoundland government crown Price lease	Bowaters private Price private Reid private (property now owned by Abitibi-Price and Corner Brook Pulp and Paper)			Municipal and private	Uninventoried areas
Newfoundland Labrador intensive			All records					
Newfoundland Labrador extensive			All records					

Conversion table for Nova Scotia

Province or territory	<<— NATINV86 Ownership Class							—>>
	<— Federal	—>	Provincial/ territorial	<— Private			—>	Missing Value
	Other Federal	Native		Industrial	Nonindustrial	Municipal	Unspecified private	
Nova Scotia 3P inventory (eastern and central counties)	excluded: (other Federal)*	excluded: (Indian Reserves)*	Crown freehold Crown lease	Large private	Small private			Uninventoried areas
	*Other Federal and Native data was available from the source inventory but was not used.							
Nova Scotia temporary sample plot inventory (western counties)	excluded: (other Federal)*	excluded: (Indian Reserves)*	Provincial crown	Large private	Small private			Uninventoried areas
	*Other Federal and Native data was available from the source inventory but was not used.							
Nova Scotia FEDINV81 - from the Nova Scotia temporary sample plot inventory maps (1965 to 1971)	National Parks Department of National Defence	Indian Reserves						
Nova Scotia FEDINV81 - from 1954 CFS "Forest Management Institute map	Cape Breton Highlands National Park							
Nova Scotia FEDINV81 - from CFS Forestry Statistics and Systems Branch photo reconnaissance	Camp Aldershot Granville Ferry CFB Greenwood							

Conversion table for Prince Edward Island and New Brunswick

Province or territory	<<——NATINV86 Ownership Class							——>>
	<—— Federal	——>	Provincial/ territorial	<—— Private			——>	Missing Value
	Other Federal	Native		Industrial	Nonindustrial	Municipal	Unspecified private	
Prince Edward Island	National Defence National Parks	Indian reserves	Provincial		Private includes some provincial crown and roadside parks			
New Brunswick New inventory			Crown land Licences Provincial park	Large freehold owners (licencees and sublicencees)	Small freehold owners			
New Brunswick NATINV81			Crown land				Large freehold Small freehold	Undetermined ownership
New Brunswick FEDINV81	Canadian Forestry Service (Acadia Forest Experiment Station) Department of National Defence National Parks	Indian reserves						

Conversion table for Québec

Province or territory	<<---NATINV86 Ownership Class							--->>
	<--- Federal	--->		<--- Private			--->	
	Other Federal	Native	Provincial/ territorial	Industrial	Nonindustrial	Municipal	Unspecified private	Missing Value
Québec 2nd decennial	Federal properties	Indian reserves	Crown forests Ecological reserves Experimental stations Forest concession Forestry stations Provincial Parks Provincial crown lands not inventoried Vacant lands of other Ministries Vacant Ministry of Energy and Natural Resources lands	Large private property	Small private property	Montreal vicinity		
Québec BIOMASS84			Crown forests Forestry stations Permanent reserves Regular and special concession Special reserves Township reserves Vacant Ministry of Agriculture lands Vacant Ministry of Lands and Forests lands					Uninventoried areas
Québec NATINV81			as BIOMASS84 above				Large private property Small private property	Uninventoried areas
Québec FEDINV81	Department of National Defence Federal forests National Capital Commission National Parks Other Federal forests	Indian reserves						

Conversion table for Ontario and Manitoba

Province or territory	<<—— NATINV86 Ownership Class ——>>							
	<—— Federal ——>		Provincial/ territorial	<—— Private ——>				Missing Value
	Other Federal	Native		Industrial	Nonindustrial	Municipal	Unspecified private	
Ontario Forest Resource Inventory	Other federal	Indian Reserves	Crown Modified management area Provincial park Pukaskwa National Park[*]	Company freehold	Agreement Forest Patent fee simple Patent timber to crown			Uninventoried areas
Ontario FEDINV81		Indian Reserves						Undetermined ownership
Ontario CFB Petawawa, PNFI, and AECL	All records							
Manitoba	Department of National Defence in agriculture and forest zones Federal agriculture lands National parks	Indian lands	All other records		Patented	Local government district Municipal		

[*] Should have been coded as Other Federal

Conversion table for Saskatchewan

Province or territory	<<------ NATINV86 Ownership Class							------>>
	<------ Federal ------>		Provincial/ territorial	<------ Private			------>	Missing Value
	Other Federal	Native		Industrial	Nonindustrial	Municipal	Unspecified private	
Saskatchewan TWP		Indian lands	All other records				Patented	Uninventoried areas
Saskatchewan UTM	CFS PSP's	Indian lands	Experimental reserve Forest Management Agreement Permanent sample plots Recreation reserve Silviculture reserve				Patented	
Saskatchewan NTS-N		Indian lands	All other records Forest Management Agreement					
Saskatchewan NTS-S		Indian lands	All other records				Private land	
Prince Albert National Park	All records							
Saskatchewan North Gap			All records					
Saskatchewan South Gap	Department of National Defence	Indian lands	All other records		Community pasture Experimental reserve Patented Permanent sample plots Recreation reserve Silviculture reserve			

Conversion table for Alberta

Province or territory	<<—— NATINV86 Ownership Class ——>>							
	<—— Federal ——>		Provincial/ territorial	<—— Private ——>				Missing Value
	Other Federal	Native		Industrial	Nonindustrial	Municipal	Unspecified private	
Alberta Management	Ya Ha Tinda Ranch	Indian lands	All other records			Municipal	Patented	Uninventoried areas
Alberta Gap	Elk Island National Park		All other records			Municipal	Patented	Undetermined ownership
Alberta FEDINV81	All records							
Alberta NATINV81 for FMU-A13 and Fishing Lake Metis Settlement			All other records				Alienated Patented	Not inventoried

Conversion table for British Columbia/Yukon Territory/Northwest Territories

Province or territory	<<—— NATINV86 Ownership Class							——>>
	<—— Federal ——>			<—— Private			——>	
	Other Federal	Native	Provincial/ territorial	Industrial	Nonindustrial	Municipal	Unspecified private	Missing Value
British Columbia Management	Canadian Government block National parks National reserve Military reserve	Indian reserve	Crown-Christmas tree permit Crown-experimental Crown-lease Crown-other reserve Crown-timber alienated Crown-tree farm licence (T.F.L.) Crown-woodlot Ecological reserve Forest unit (P.S.Y.U.) Provincial Parks Unreserved (U.R.E.P.)		Crown grants		Municipal*	
British Columbia NATINV81	Other federal National parks						Private	
Yukon Territory	National parks		Northern Affairs					
Northwest Territories	Federal reserved (Nahanni National Park, Wood Buffalo National Park)		Federal retained					

*Municipal should have been put in the NATINV86 class of municipal.

Conversion table for Newfoundland

Province or territory	<<— NATINV86 Status Classes				—>>
		<<— Nonreserved		—>>	
	Reserved	Assigned	Retained	Other	Missing value
Newfoundland Management	Newfoundland reserve	Bowater licence Price charter Price licence Price licence (short term)	Federal reserves Newfoundland crown	Bowater private Municipality Price private Private land Residential area	Fresh water in areas where ownership cannot be defined Municipal control area
Labrador Management			Newfoundland government crown		
Newfoundland Global	Canadian government reserve (except Argentia Naval Base) Newfoundland government reserve)	Bowater lease Price lease	Argentia Naval Base Newfoundland government crown	Bowater private Muncipal and private Price private Reid private	Uninventoried areas
Newfoundland Labrador intensive			All records		
Newfoundland Labrador extensive			All records		

Conversion table for Nova Scotia

Province or territory	<<——— NATINV86 Status Classes ———				>>
		<<——— Nonreserved	———	———>>	
	Reserved	Assigned	Retained	Other	Missing value
Nova Scotia 3P inventory (eastern and central counties)		Crown lease	Crown freehold	Large owners Small owners	Uninventoried areas
Nova Scotia temporary sample plot inventory (western counties)			Crown unleased (other counties)	Large owners Small owners	Uninventoried areas
Nova Scotia FEDINV81 - from the Nova Scotia temporary sample plot inventory maps (1965 to 1971)	National Parks		Department of National Defence Indian reserves		
Nova Scotia FEDINV81 - from 1954 CFS "Forest Management Institute map	Capt Breton Highlands National Park				
Nova Scotia FEDINV81 - from CFS Forestry Statistics and Systems Branch photo reconnaissance			Camp Aldershop CFB Greenwood Granville Ferry		

Conversion table for Prince Edward Island and New Brunswick

Province or territory	<<— NATINV86 Status Classes —>>				
		<<— Nonreserved —>>			
	Reserved	Assigned	Retained	Other	Missing value
Prince Edward Island		Indian reserves	Department of National defence Provincial National Park*	Private	
New Brunswick New inventory		Crown land Provincial Parks		Large freehold owners Small freehold owners	
New Brunswick NATINV81		Crown land		Large freehold owners Small freehold owners	Undetermined status
New Brunswick FEDINV81	National Parks		Canadian Forestry Service Department of National Defence Indian reserves		Undetermined status

*National Parks should be coded as reserved.

Conversion table for Québec

Province or territory	<<—— NATINV86 Status Classes ——>>				
		<<—— Nonreserved ——>>			
	Reserved	Assigned	Retained	Other	Missing value
Québec 2nd decennial	Ecological reserves Experimental stations Federal properties Forestry stations Provincial parks Vacant lands of other Ministries	Forest concession	Crown forests Indian reserves Vacant Ministry of Energy and Natural Resources lands	Large private property Small private property	Provincial crown lands not inventoried
Québec BIOMASS84			Crown forests Forest station Permanent reserve Special reserve Township reserve Vacant Ministry of Agriculture lands Vacant Ministry of Energy and Natural Resources		Uninventoried areas
Québec NATINV81		Regular forest concession Special forest concession	as BIOMASS84 above	Large private property Small private property	Uninventoried areas
Québec FEDINV81	National Capital Commission National Parks		Department of National Defence Indian reserve Other federal forests		

Conversion table for Ontario and Manitoba

Province or territory	<<— NATINV86 Status Classes —>>				
		<<— Nonreserved		—>>	
	Reserved	Assigned	Retained	Other	Missing value
Ontario Forest Resource Inventory	Provincial parks except Algonquin Provincial Park	Provincial crown-forest management agreement Provincial crown-long-term licence Pukaskwa National Park*	Algonquin Provincial Park Federal Indian reserve Modified management area Other Federal Provincial crown-non forest management agreement	Agreement forest Company freehold Patent fee simple Patent timber to crown	Uninventoried areas
Ontario FEDINV81			Indian Reserves		Undetermined status
Ontario CFB Petawawa, PNFI, and AECL			All records		
Manitoba	Department of National Defence in agriculture zone Federal agriculture lands National parks Provincial agriculture lands	Department of National Defence in forest zone INCO land Indian lands Forest management licence	Permanent forest Provincial forest Provincial park Specified area Wildlife management areas Federal retained Native retained	Agriculture Community pasture Local government district Municipal Patented	

*Should have been coded as reserved

Conversion table for Saskatchewan

Province or territory	<<------ NATINV86 Status Classes ------>>				
		<<------ Nonreserved ------>>			
	Reserved	Assigned	Retained	Other	Missing value
Saskatchewan TWP	Other federal and provincial crown Provincial parks		All other forest records Gravel pits Indian lands Roads	Patented	Uninventoried areas
Saskatchewan UTM	Permanent sample plots Recreation reserve Silviculture reserve	Air weapons range Forest Management Agreement Indian lands	All other forest records CFS Permanent sample plots Experimental reserves	Patented	Undetermined status
Saskatchewan NTS-N		Air weapons range Forest Management Agreement Indian lands	All other forest records CFS Permanent sample plots		
Saskatchewan NTS-S	Provincial crown/pasture Provincial forest	Land bank Provincial crown/lease	Provincial crown/vacant Saskatchewan Parks and Renewable Resources	Private land	
Prince Albert National Park	All records				
Saskatchewan North Gap			All records		
Saskatchewan South Gap	Permanent sample plots Recreation reserve Silviculture reserve	Air weapons range Forest Management Agreement Indian lands		Community pasture Patented	

Conversion table for Alberta

Province or territory	<<— NATINV86 Status Classes —>>				
		<<— Nonreserved —>>			
	Reserved	Assigned	Retained	Other	Missing value
Alberta Management	Ecological reserves ESIP zones 1,3,6,7,8 Experimental areas Provincial parks Wilderness area Ya Ha Tinda ranch	Defence area Educational reserve Forest management Indian lands Metis colonies Provisional reserve	Grazing Miscellaneous timber use Quota Recreation Reserved area Woodlot	Municipal Patented	Uninventoried areas
Alberta Gap	Ecological reserves ESIP zones 1,3,6,7,8 Experimental areas Provincial parks Wilderness area	Defence area Educational reserve Forest management Indian lands Metis colonies Provisional reserve	Grazing Miscellaneous timber use Quota Recreation Reserved area Woodlot	Municipal Patented	Undetermined status
Alberta FEDINV81	All records				
Alberta NATINV81 for FMU-A13 and Fishing Lake Metis Settlement			All other records	Alienated Patented	Not inventoried

Conversion table for British Columbia/Yukon Territory/Northwest Territories

Province or territory	<<——— NATINV86 Status Classes ———>>				
		<<——— Nonreserved ———>>			
	Reserved	Assigned	Retained	Other	Missing value
British Columbia Management	Crown-experimental Crown-other reserves Ecological reserve National parks Provincial parks	Crown-Christmas tree permit Crown-timber alienated Crown-tree farm licence (T.F.L.) Crown-woodlot	Canadian Government block Crown lease Forest unit (P.S.Y.U.) Indian reserve Military reserve National reserve Unreserved (U.R.E.P.)	Crown grants Municipal	
British Columbia NATINV81	National parks		Other federal	Private	
Yukon Territory	Lake reservation National parks Pipeline reservation Powerline reservation Railway reservation Road reservation Stream reservation		Forest land Nonforest undifferentiated Water		
Northwest Territories	Nahanni National Park Wood Buffalo National Park		All other records		

Conversion table for Newfoundland

Province or territory	<<——NATINV86 Land Class——>>						
	Productive forest	Unproductive forest	Forest: Unspecified productivity	Nonforest	Land: Unspecified forest/nonforest	Water	Missing value
Newfoundland Management	Forest	Hardwood scrub Softwood scrub		Agriculture Bog and treed bog Other cleared land Residential Right-of-way Rock barren Sand Soil barren		Freshwater	
Labrador Management	Forest	Hardwood scrub Softwood scrub		Agriculture Bog and treed bog Other cleared land Residential Right-of-way Rock barren Sand Soil barren		Freshwater	
Newfoundland Global	Forest	Hardwood scrub Softwood scrub		Agricultural land Bog Cleared land Rock barren Soil barren		Water	
Newfoundland Labrador intensive	Forest			Agricultural land Bog and treed bog Cleared land Right-of-way Rock barren Soil barren		Freshwater	
Newfoundland Labrador extensive	Forest	Hardwood scrub Softwood scrub		Bog and treed bog Cleared land Rock barren Soil barren		Freshwater	

Conversion table for Nova Scotia

Province or territory	<<------ NATINV86 Land Class ------>>						
	Productive forest	Unproductive forest	Forest: Unspecified productivity	Nonforest	Land: Unspecified forest/nonforest	Water	Missing value
Nova Scotia 3P inventory (eastern and central counties)	Capability classes 3 to 9, MAIr (mean annual increment at rotation age of 2.6 to 9.5 m^3/ha.yr*)	Capability classes 0 to 2 (MAIr up to 2.5 m^3/ha.yr)		Agriculture and marsh, misc. Agriculture - orchard Agriculture - pasture Agriculture - tilled / crop Alder, <75% cover Alder, >75% cover (forest) Alder, >75% cover (old field) Bog open Bog treed Brush Miscellaneous Roads and railways Rock barren Tidal flat Transmission lines Urban		Flowage Water	Undetermined land class
Nova Scotia temporary sample plot inventory (western counties)	Capability classes 3 to 5 (MAIr of 2.2 to 6.2 m^3/ha.yr)	Capability class 6 (MAIr up to 2.1 m^3/ha.yr)		Agriculture and march Alder brush Open bog Rock barren Tidal flat and marsh Transmission lines Treed bog Urban		Flowage Water	Undetermined land class
Nova Scotia FEDINV81 - from the Nova Scotia temporary sample plot inventory maps (1965 to 1971)	All other records	Muskeg with stunted trees		Agriculture Bog or open muskeg Brushland and alders Flowage (seasonal) Rock barren Tidal flats and marsh Urban		Flowage (other) Water	
Nova Scotia FEDINV81 - from 1954 CFS "Forest Management Institute map	Burn (uncertain productivity) Productive forest			Nonforest		Water	
Nova Scotia FEDINV81 - from CFS Forestry Statistics and Systems Branch photo reconnaissance	Productive forest			Nonforest		Water	

*ha.yr = ha.a

Conversion table for Prince Edward Island and New Brunswick

Province or territory	<<——— NATINV86 Land Class ———						——— >>
	Productive forest	Unproductive forest	Forest: Unspecified productivity	Nonforest	Land: Unspecified forest/nonforest	Water	Missing value
Prince Edward Island	All other records	Alder (on farm land) Alder (on wet ground)		Agricultural land Bog Cleared land, non-productive Gravel pit Railway Recreation land Road Sand dune	St. Peter's and Governor's Islands	Flowage Swamps, open Water	
New Brunswick New inventory	All other records	Alders near water Nonproductive forest		Cover type: Agricultural land Alders on cut Alders on field Gravel pit Mining Occupied Railways Road Rock outcrop Transmission lines Wasteland		Water	
New Brunswick NATINV81	Hardwood Hardwood-softwood Old field Plantation Recent burn Recent clearcut Softwood Softwood-hardwood	Nonproductive forest		Cover type: Agricultural land Occupied Railways Rock outcrop Transmission lines Wasteland		Water	
New Brunswick FEDINV81	All other records	Unproductive forest	Undetermined productivity	Nonforest	Undetermined land class	Water	

Conversion table for Québec

Province or territory	NATINV86 Land Class						
	Productive forest	Unproductive forest	Forest: Unspecified productivity	Nonforest	Land: Unspecified forest/nonforest	Water	Missing value
Québec 2nd decennial	All other forest land records	Alder Dry barren land Moist barren land		Agricultural land Other lands Roads Transmission lines	Provincial crown lands not inventoried	Water	
Québec BIOMASS84 NATINV81	All other forest land	Alder Dry barren land Moist barren land		Agricultural land Other lands Roads Transmission lines		Water	
Québec FEDINV81	All other forest land	Alder Dry barren land Moist barren land		Agricultural land Other lands Roads Transmission lines		Water	Undetermined land class

Conversion table for Ontario and Manitoba

Province or territory	<<———— NATINV86 Land Class ————>>						
	Productive forest	Unproductive forest	Forest: Unspecified productivity	Nonforest	Land: Unspecified forest/nonforest	Water	Missing value
Ontario Forest Resource Inventory	All other records	Forested land: Brush and alder Non-productive Open muskeg Protection forest (site class 4) Rock Treed muskeg Unsurveyed		Nonforested: Developed agricultural land Grass and meadow Unclassified land Unsurveyed		Water	
Ontario FEDINV81	Productive forest land	Unproductive forest land		Nonforest land		Water	Undetermined land class
Ontario CFB Petawawa, PNFI, and AECL	All other forest records Plantations	Alder Dry barren land Moist barren land Site class 6		Pipe lines Roads Transmission lines	Undetermined land class	Flooded land Water	
Manitoba	Productive forest	Protection forest Treed muskeg Treed rock Willow-alder		Barren-bare rock Fields (agriculture) Marsh-muskeg Meadow Unclassified (roads, towns)		Water	

Conversion table for Saskatchewan

Province or territory	<<——— NATINV86 Land Class ———						>>
	Productive forest	Unproductive forest	Forest: Unspecified productivity	Nonforest	Land: Unspecified forest/nonforest	Water	Missing value
Saskatchewan TWP	Blowdown Brushland Clearing Forested Grassland Plantation Regeneration Scarified Strip cut	Treed sand Treed swamp		Brushland Clear muskeg Clear rock Flooded Nonproductive burn Sand		Water	Uninventoried areas
Saskatchewan UTM	All other records	Treed muskeg Treed rock	Uninventoried Indian land	Air strip Clear muskeg Clearing Flooded Gravel pit Meadow Mud flats Nonproductive burn Sand	Not typed lands Recreation reserve	Water	
Saskatchewan NTS-N	All other records	Treed muskeg Treed rock	Uninventoried Indian land	Brushland Clear muskeg Clear rock Flooded Nonproductive burn Sand		Water	
Saskatchewan NTS-S	All other records			Cleared land		Water	
Prince Albert National Park	Productive forest			Air strip Brushland Clear rock Clear sand Clear swamp Gravel pit Mine Mud flats Roads		Water	
Saskatchewan North Gap	All other records	Unproductive forest		Nonforest		Water	
Saskatchewan South Gap	All other records	Unproductive forest		Nonforest		Water	

Conversion table for Alberta

Province or territory	<<——NATINV86 Land Class——>>						
	Productive forest	Unproductive forest	Forest: Unspecified productivity	Nonforest	Land: Unspecified forest/nonforest	Water	Missing value
Alberta Management	All other records	Coniferous scrub Deciduous scrub Treed muskeg	Unspecified productivity	Clearings Cultivated Flooded land Glacier Grassland Open muskeg Rock barren Sand Soil	Unclassified	Water	Uninventoried areas
Alberta Gap	All other records	Unproductive forest		Nonforest		Water	
Alberta FEDINV81	All other records	Cleared Coniferous scrub Deciduous scrub Stunted due to elevation Treed muskeg	Undetermined productivity	Above treeline Brushland Clearings Cut banks Flooded land Grassland Open muskeg Rock barren Sand		Water	
Alberta NATINV81 for FMU-A13 and Fishing Lake Metis Settlement	All other records	Cleared Coniferous scrub Deciduous scrub Stunted due to elevation Treed muskeg		Above treeline Brushland Clearings Cut banks Flooded land Grassland Open muskeg Rock barren Sand	Undetermined land class	Water	

Conversion table for British Columbia/Yukon Territory/Northwest Territories

Province or territory	<<——— NATINV86 Land Class			———			>>
	Productive forest	Unproductive forest	Forest: Unspecified productivity	Nonforest	Land: Unspecified forest/nonforest	Water	Missing value
British Columbia Management	Disturbed, stocking doubtful (DSD) Immature Mature Non-commercial species (NC) Not satisfactorily restocked (NSR) Residual	Alpine forest Nonproductive (NP)		Nonforest except for alpine forest and nonproductive		Booming ground Lake Log jam River Slough	
British Columbia NATINV81	Productive	Unproductive	Unspecified productivity	Nonforest		Water	Uninventoried areas
Yukon Territory	Site 1,2,3 (very good, good, medium)	Site 4,5 (steep slopes, excess moisture)	Not recorded site (0)	Nonforest undifferentiated	Unspecified forest/ nonforest	Water	
Northwest Territories	Burn, some (2%) Cut, most (88%) Site class 1,2,3	Burn, some (1%) Site class 4,5	Burn, most (97%) Cut, some (12%) Other	Nonforest		Water	

Conversion table for Newfoundland

Province or territory	<< NATINV86 Site Quality >>								
	Species	1	2	3	4	5	6	7	Missing value
Newfoundland Management		Poor	Good Medium	High					
Labrador Management		Poor	Good Medium	High					
Newfoundland Global									All productive forest records
Newfoundland Labrador intensive									All productive forest records
Newfoundland Labrador extensive									All productive forest records

Conversion table for Nova Scotia

Province or territory	<<————				NATINV86 Site Quality			————>>	
	Species	1	2	3	4	5	6	7	Missing value
Nova Scotia 3P inventory (eastern and central counties)		Capability class 3 to 5 (MAIr of 2.6 to 5.5 m^3/ha.yr)	Capability class 6 and 7 (MAIr of 5.6 to 7.5 m^3/ha.yr)	Capability class 8 and 9 (MAIr of 7.6 to 9.5 m^3/ha.yr)					Undetermined land class
Nova Scotia temporary sample plot inventory (western counties)		Capability class 5 (MAIr of 2.2 to 3.4 m^3/ha.yr)	Capability class 4 (MAIr of 3.5 to 4.9 m^3/ha.yr)	Capability class 3 (MAIr of 5.0 to 6.2 m^3/ha.yr)					Undetermined land class
Nova Scotia FEDINV81 - from the Nova Scotia temporary sample plot inventory maps (1965 to 1971)		Site class V (poor)	Site Class IV (average)	Site class III (good)					
			Undetermined site class						
Nova Scotia FEDINV81 - from 1954 CFS "Forest Management Institute map			All productive forest records						
Nova Scotia FEDINV81 from CFS Forestry Statistics and Systems Branch photo reconnaissance			Site class 2						

Conversion table for Prince Edward Island and New Brunswick

Province or territory	<<——NATINV86 Site Quality——>>								
	Species	1	2	3	4	5	6	7	Missing value
Prince Edward Island									All productive forest records
New Brunswick New inventory									All productive forest records
New Brunswick NATINV81									All productive forest records
New Brunswick FEDINV81									All productive forest records

Conversion table for Québec

Province or territory	<<———— NATINV86 Site Quality ————>>								
	Species	1	2	3	4	5	6	7	Missing value
Québec 2nd decennial									All productive forest records
Québec BIOMASS84 FEDINV81 NATINV81									All productive forest records

Conversion table for Ontario and Manitoba

Province or territory	<<— NATINV86 Site Quality —>>								
	Species	1	2	3	4	5	6	7	Missing value
Ontario Forest Resource Inventory		<- Site classes determined from Plonski's yield tables ->							
	S,Sb,Sw,B, Ce,L,C	2,3	1	X					
	Pw	3	2	1	X				
	Pr,Ps		3	1,2	X				
	Pj		3	1,2	X				
	He,Ms,A,By, Mh,Oh		2,3	1,X					
	Bw		3	1,2	X				
	Po,Pb			2,3	1	X			
Ontario FEDINV81									Undetermined site class
Ontario CFB Petawawa, PNFI, and AECL		Site class 5	Site class 4	Site class 3	Site class 2	Site class 1			Plantations
Manitoba	Balsam fir	Dry		Fresh, moist, very moist					
	Black spruce	Dry	Saturated	Fresh, moist, very moist, wet					
	Jack pine		Arid Dry	Fresh, moist, very moist					
	Larch		Saturated	Moist, very moist, wet					
	Trembling aspen	Arid	Dry	Fresh, moist, very moist, wet					
	White spruce	Arid Dry		Fresh, moist, very moist					

Conversion table for Saskatchewan

Province or territory	<<— NATINV86 Site Quality — Species								—>> Missing value
		1	2	3	4	5	6	7	
Saskatchewan TWP									All productive forest records
Saskatchewan UTM									All productive forest records
Saskatchewan NTS-N									All productive forest records
Saskatchewan NTS-S									All productive forest records
Prince Albert National Park									All productive forest records
Saskatchewan North Gap		Fair Medium black spruce	Good black spruce Medium all other species	Good all other species					Undetermined site class
Saskatchewan South Gap		Fair Medium black spruce	Good black spruce Medium all other species	Good all other species					

Conversion table for Alberta

Province or territory	<<—NATINV86 Site Quality—>>								
	Species	1	2	3	4	5	6	7	Missing value
Alberta Management		Fair Medium black spruce	Good black spruce Medium all other species	Good all other species					Undetermined site quality
Alberta Gap		Fair Medium black spruce	Good black spruce Medium all other species	Good all other species					
Alberta FEDINV81		Poor Very poor	Medium	Good					Undetermined site quality
Alberta NATINV81 for FMU-A13 and Fishing Lake Metis Settlement		Poor Very poor	Medium	Good					Undetermined site quality

Conversion table for British Columbia/Yukon Territory/Northwest Territories

Province or territory	<<—NATINV86 Site Quality								—>>
	Species	1	2	3	4	5	6	7	Missing value
British Columbia Management		Site class is computed using the age and height class midpoints, the major species and in some cases whether the stand is coastal or in the interior. The following equation is used: SH=H/b1(1-e**[b2A]**[b3] This is also cross-checked against British Columbia site index at 100 years. The site is undetermined if age or height data is absent.							Undetermined site quality
British Columbia NATINV81			Site class 2	Site class 3	Site class 4	Site class 5			Undetermined site quality
Yukon Territory		Site 3 (medium)	Site 2 (good)	Site 1 (very good)					Undetermined site quality
Northwest Territories		Site class 3	Site class 2	Site class 1					Undetermined site quality

Conversion table for Newfoundland

Province or territory	<< NATINV86 Stocking Class					>>
			<- Stocked		->	
	Nonstocked	Unproven stocking	Partially stocked	Fully stocked	Unquantified stocked	Missing Value
Newfoundland Management		Not sufficiently restocked	Crown density class 3 (26-50%)	Crown density classes 1 and 2 (51+%)	Crown density class 0 (all immature stands)	
Labrador Management		Not sufficiently restocked	Crown density class 3 (26-50%)	Crown density classes 1 and 2 (51+%)	Crown density class 0 (all immature stands)	
Newfoundland Global		Burn cover type Cut over cover type Other cover types with disturbance class 4, severe	Crown density class F(26-50%) and G(0-25%)	Crown density class D(76-100%) and E(50-75%)		
Newfoundland Labrador intensive		Burn cover type Other cover types with disturbance class 4, severe			All stocked productive forest records	
Newfoundland Labrador extensive		Burn Cut Insect Wind			All stocked productive forest records	

Conversion table for Nova Scotia

Province or territory	<< NATINV86 Stocking Class >>					
			<- Stocked ->			
	Nonstocked	Unproven stocking	Partially stocked	Fully stocked	Unquantified stocked	Missing Value
Nova Scotia 3P inventory (eastern and central counties)		Basal area class 1 (up to 10 m^2/ha)			Basal area classes 2 to 7 (11 m^2/ha and greater)	
Nova Scotia temporary sample plot inventory (western counties)		Density class 1, <40%; height class 1, <5m; volume class 1, <40 m^3/ha; and age classes 2 to 7			All other productive forest records	
Nova Scotia FEDINV81 - from the Nova Scotia temporary sample plot inventory maps (1965 to 1971)		Recent clear cut	Density class 1 (up to 40%)	Density class 2 (41 to 60%) and class 3 (61 to 100%)		
		Nonstocked Undetermined stocking			Stocked	
Nova Scotia FEDINV81 - from 1954 CFS "Forest Management Institute map		Burn	Partially stocked	Fully stocked		
Nova Scotia FEDINV81 - from CFS Forestry Statistics and Systems Branch photo reconnaissance			Partially stocked	Fully stocked		

Conversion table for Prince Edward Island and New Brunswick

Province or territory	<< NATINV86 Stocking Class					>>
			<— Stocked		—>	
	Nonstocked	Unproven stocking	Partially stocked	Fully stocked	Unquantified stocked	Missing Value
Prince Edward Island		Burn Clearcut Cleared land, potentially productive Disease-insect Windfall	Crown closure D D=0-30%	Crown closure A,B,C A=81-100% B=61-80% C=31-60%	Plantation (younger; note that older plantations have a stand description and volumes)	
New Brunswick New inventory	Field and softwood or hardwood not visible	Burn and not planted and softwood or hardwood not visible Cutover (as above) Windthrow (as above)	Class 1 10-30%*	Classes 2 to 5 30-50%* 50-70%* 70-90%* 90-100% Plantation *includes patchy & variable	Burn and softwood or hardwood visible Cutover (as above) Field (as above) Windthrow (as above)	
New Brunswick NATINV81		Old field Recent burn Recent clearcut			All other productive forest records	
New Brunswick FEDINV81		Nonstocked			Stocked	

Conversion table for Québec

Province or territory	<<— NATINV86 Stocking Class —>>					
			<— Stocked —>			
	Nonstocked	Unproven stocking	Partially stocked	Fully stocked	Unquantified stocked	Missing Value
Québec 2nd decennial		Abandoned farm land Burnover Cutover Severe epidemic Total blowdown			All stocked forest records Plantation	
Québec BIOMASS84					Immature Mature Plantation Regenerated	
Québec FEDINV81 NATINV81		Burn total Cutover Severe epidemic Total blowdown Waste land			Immature Mature Plantation Regenerated	

Conversion table for Ontario and Manitoba

Province or territory	<<——— NATINV86 Stocking Class					———>>
			<——— Stocked		———>	
	Nonstocked	Unproven stocking	Partially stocked	Fully stocked	Unquantified stocked	Missing Value
Ontario Forest Resource Inventory		Barren and scattered (stocking <.3)*	Stocking .3 to .5	Stocking .6 and greater	Unquantified stocked	
	*0.3 stocking means 30% of the normal basal area					
Ontario FEDINV81		Nonstocked			Stocked	
Ontario CFB Petawawa PNFI, and AECL			*	Density 3 Density 4	Plantations	Undetermined stocking class
	*Density classes 1 and 2 would be partially stocked.					
Manitoba		0-20% crown closure (class 0) Potentially productive (not restocked after fire, windfall, cutting, or other major disturbance)	21-50% crown closure (class 2)	51%+ crown closure (classes 3 and 4)		

Conversion table for Saskatchewan

Province or territory	<< NATINV86 Stocking Class					>>
			<- Stocked		->	
	Nonstocked	Unproven stocking	Partially stocked	Fully stocked	Unquantified stocked	Missing Value
Saskatchewan TWP		Blowdown Brushland Burnt-over Clearing Cut-over Forested Grassland Plantation Regeneration Scarified Stripcut			All forest types	
Saskatchewan UTM		Burn-over Cutover Experimental area Open productive Permanent sample plots Recreation reserve Scrub brush Silviculture reserve	<=30% (density class A)	>=31% (density classes B,C,D)		
Saskatchewan NTS-N		Burn Undetermined cause of disturbance	<=30% (density class A)	>=31% (density classes B,C,D)		
Saskatchewan NTS-S			Partial crown closure (10-30%)	Full crown closure (>30%)		
Prince Albert National Park					All forest types	
Saskatchewan North Gap			<=30% (density class A)	>=31% (density classes B,C,D)	Regenerating burn	
Saskatchewan South Gap			<=30% (density class A)	>=31% (density classes B,C,D)		

Conversion table for Alberta

Province or territory	<<— NATINV86 Stocking Class —>>					
			<— Stocked —>			
	Nonstocked	Unproven stocking	Partially stocked	Fully stocked	Unquantified stocked	Missing Value
Alberta Management	Density 6-50% (classes A,B) height <6.1 m (class 0)	Brush Burns Clear cut Insect kill Various kill Windfall	Height 6.1+ m (classes 1-5) density 6-100% (classes A-D) with clearcut, burn, insect kill, brush, various kill	Height 6.1+ m (classes 1-5) density 6-100% (classes A-D) Height <6.1 m (class 0) density 51-100% (classes C,D)	Unquantified stocked	
Alberta Gap			<31% density (class A)	>=31% density (classes B,C,D)		
Alberta FEDINV81		Potentially productive 6-30% crown density (class A)			All other productive forest records	Undetermined stocking
Alberta NATINV81 for FMU-A13 and Fishing Lake Metis Settlement		Potentially productive 6-30% crown density (class A)			All other productive forest records	

Conversion table for British Columbia/Yukon Territory/Northwest Territories

Province or territory	<<— NATINV86 Stocking Class					—>>
			<— Stocked		—>	
	Nonstocked	Unproven stocking	Partially stocked	Fully stocked	Unquantified stocked	Missing Value
British Columbia Management	Non-commercial species (N.C.) Not satisfactorily restocked (N.S.R.)	Disturbed, stocking doubtful (D.S.D.)		Immature Mature Residual immature	Unquantified stocked	
British Columbia NATINV81		Unproven stocking	Partly stocked	Fully stocked	Unquantified stocked	Undetermined stocked
Yukon Territory	Cover type C,B,P (cut, burn, pests) and height-maturity 0 and density 0 (both not recorded)	Height-maturity 1 (regen.) and density 0,A,B,C*	Density A (sparse)	Density B and C (moderate and full stocking)	Unquantified stocked	
Northwest Territories		Nonstocked Burn Cut Other	10-40% crown closure	>40% crown closure	Stocked (Sw, Mw, Hw, sites 1-3)	

*Should be reconsidered for 1991 inventory.

Conversion table for Newfoundland

Province or territory	<< NATINV 86 Cause of Disturbance				>>	<< Age Class		
							<— Even-aged	
	Cutover	Burn	Pest	Other	Missing value	Species and Maturity	0 1-5	1 1-20
Newfoundland Management	Logging	Fire	Insect	Miscellaneous Vegetation Wind				Age class 1 (0-20)
Labrador Management	Logging	Fire		Miscellaneous Vegetation Wind				Age class 1 (0-20)
Newfoundland Global	Cutover	Burn		Various Wind				
Newfoundland Labrador intensive		Burn			Undetermined cause of disturbance			
Newfoundland Labrador extensive	Cut	Burn						

Conversion table for Nova Scotia

Province or territory	<< NATINV 86 Cause of Disturbance >>					<< Age Class		
							<- Even-aged	
	Cutover	Burn	Pest	Other	Missing value	Species and Maturity	0 1-5	1 1-20
Nova Scotia 3P inventory (eastern and central counties)					All unproven stocking records			Age class 1 (up to 20)
Nova Scotia temporary sample plot inventory (western counties)					All unproven stocking records			Age class 1 (up to 20)
Nova Scotia FEDINV81 - from the Nova Scotia temporary sample plot inventory maps (1965 to 1971)	Recent clear cut				Undetermined cause of disturbance			
Nova Scotia FEDINV81 - from 1954 CFS "Forest Management Institute map					Burn			
Nova Scotia FEDINV81 - from CFS Forestry Statistics and Systems Branch photo reconnaissance								

Conversion table for Prince Edward Island and New Brunswick

Province or territory	<< NATINV 86 Cause of Disturbance				>>	<< Age Class		
							<— Even-aged	—
	Cutover	Burn	Pest	Other	Missing value	Species and Maturity	0 1-5	1 1-20
Prince Edward Island	Clearcut	Burn	Disease-insect	Cleared land, potentially productive Windfall				
New Brunswick New inventory	Cutover and not planted and softwood or hardwood not visible	Burn and not planted and softwood or hardwood not visible		Field and softwood or hardwood not visible Windthrow not planted and softwood or hardwood not visible		Age class is derived from predominant genus and maturity class, for example: Black spruce regenerating (15-30) young immature (30-45) old immature (45-70) mature (70-110) overmature (110+) *Burn, cutover, field, and windfall with hardwood or softwood visible. Plantation.		33% *
New Brunswick NATINV81	Recent clearcut	Recent burn		Old field				
New Brunswick FEDINV81	Cutover	Burn		Other	Undetermined cause of disturbance			

Conversion table for Québec

Province or territory	<< NATINV 86 Cause of Disturbance				>>	<< Age Class		
							<— Even-aged	
	Cutover	Burn	Pest	Other	Missing value	Species and Maturity	0 1-5	1 1-20
Québec 2nd decennial	Cutover	Burn	Severe epidemic	Abandoned farm land Total blowdown	Provincial crown lands not inventoried			0-20
Québec BIOMASS84								
Québec FEDINV81	Total cut	Burnover		Total blowdown Waste land				
Québec NATINV81	Total cut	Burnover	Severe epidemic	Total blowdown Waste land	Undetermined cause of disturbance			

Conversion table for Ontario and Manitoba

Province or territory	<< NATINV 86 Cause of Disturbance >>					<< Age Class	
						< Even-aged	
	Cutover	Burn	Pest	Other	Missing value	Species and Maturity	0 1-5	1 1-20
Ontario Forest Resource Inventory					Barren and scattered		< >0 to <=5	6 to <=25
Ontario FEDINV81	Cutover							
Ontario CFB Petawawa, PNFI, and AECL					Undetermined cause of disturbance			
Manitoba					All unproven stocking records			

Conversion table for Saskatchewan

Province or territory	<< NATINV 86 Cause of Disturbance >>					<< Age Class		
							<- Even-aged	
	Cutover	Burn	Pest	Other	Missing value	Species and Maturity	0 1-5	1 1-20
Saskatchewan TWP	Stripcut	Nonproductive burn		Air strip Flooded Gravel pit Mine Plantation Regeneration Roads Scarified				<-
Saskatchewan UTM	Cutover	Burn-over		Brushland Flooded Other unproven stocking	Undetermined cause of disturbance			<-
Saskatchewan NTS-N					Undetermined cause of disturbance			
Saskatchewan NTS-S								
Prince Albert National Park								
Saskatchewan North Gap								
Saskatchewan South Gap								

Conversion table for Alberta

Province or territory	<<———— NATINV 86 Cause of Disturbance				————>>	<<———— Age Class		————
							<——— Even-aged	———
	Cutover	Burn	Pest	Other	Missing value	Species and Maturity	0 1-5	1 1-20
Alberta Management	Clearcut	Burn	Insect kill	Brush Various kill	Undetermined cause of disturbance			<———— <————
Alberta Gap								
Alberta FEDINV81	Clearcut	Burn Recent burn			Undetermined cause of disturbance			
Alberta NATINV81 for FMU-A13 and Fishing Lake Metis Settlement					Undetermined cause of disturbance			

Conversion table for British Columbia/Yukon Territory/Northwest Territories

Province or territory	<< NATINV 86 Cause of Disturbance				>>	<< Age Class		
							<— Even-aged	
	Cutover	Burn	Pest	Other	Missing value	Species and Maturity	0 1-5	1 1-20
British Columbia Management				Non-commercial species (N.C.) Not satisfactorily restocked (N.S.R.)	Undetermined cause of disturbance			1 1-20
British Columbia NATINV81	Cut	Burn			Undetermined cause of disturbance			
Yukon Territory	Cover type C (cut)	Burn Cover type B (burn)			Undetermined cause of disturbance			
Northwest Territories	Cut	Burn			Undetermined cause of disturbance			

Conversion table for Newfoundland

Province or territory	NATINV86 Age Class >>									
	Even-aged >									
	3 21-40	5 41-60	7 61-80	9 81-100 or 81+	11 101-120 or 101+	13 121-140 or 121+	15 141-160 or 141+ or 141-250	20 161+ or 251+	Uneven-aged -5	Missing value
Newfoundland Management	Age class 2 (21-40)	Age class 3 (41-60) 50% of age class 7 (41-80)	Age class 4 (61-80) 50% of age class 7 (41-80)	Age class 5 (81+)						
Labrador Management	Age class 2 (21-40)	40%	Age class (41-90) 40%	20% 16.7%	Age class 4 (91-150) 33.3%	33.3%	Age class 5 (151+) 20% 16.7%	80%		
Newfoundland Global										All stocked productive forest records
Newfoundland Labrador intensive										All stocked productive forest records
Newfoundland Labrador extensive										All stocked productive forest records

Conversion table for Nova Scotia

Province or territory	NATINV86AgeClass									
	Even-aged									
	3 21-40	5 41-60	7 61-80	9 81-100 or 81+	11 101-120 or 101+	13 121-140 or 121+	15 141-160 or 141+ or141-250	20 161+ or 251+	Uneven-aged -5	Missing value
Nova Scotia 3P inventory (eastern and central counties)	Age class 2 (21-40)	Age class 3 (41-60)	Age class 4 (61-80)	Age class 5 (81-100)	Age class 6 (101+)				Age class 7 (uneven-aged)	
Nova Scotia temporary sample plot inventory (western counties)	Age class 2 (21-40)	Age class 3 (41-60)	Age class 4 (61-80)	Age class 5 (81-100)	Age class 6 (101+)				Age class 7 (uneven-aged)	
Nova Scotia FEDINV81 - from the Nova Scotia temporary sample plot inventory maps (1965 to 1971)									Height class E	Height classes A to D
Nova Scotia FEDINV81 - from 1954 CFS "Forest Management Institute map										All stocked productive forest records
Nova Scotia FEDINV81 - from CFS Forestry Statistics and Systems Branch photo reconnaissance										All stocked productive forest records

Conversion table for Prince Edward Island and New Brunswick

Province or territory	NATINV86 Age Class >>									
	Even-aged >									
	3 21-40	5 41-60	7 61-80	9 81-100 or 81+	11 101-120 or 101+	13 121-140 or 121+	15 141-160 or 141+ or 141-250	20 161+ or 251+	Uneven-aged -5	Missing value
Prince Edward Island										All stocked productive forest records
New Brunswick New inventory	Age class is derived from predominant genus and maturity class, for example:									
	67%									
	67%	33%								
		60%	40%							
			25%	50%	25%					
					32%	57%	6%	5%		
New Brunswick NATINV81										All other stocked productive forest records
New Brunswick FEDINV81									Uneven-aged	All other stocked productive forest records

Conversion table for Québec

Province or territory	NATINV86 Age Class									
	Even-aged									
	3 21-40	5 41-60	7 61-80	9 81-100 or 81+	11 101-120 or 101+	13 121-140 or 121+	15 141-160 or 141+ or 141-250	20 161+ or 251+	Uneven-aged -5	Missing value
Québec 2nd decennial	21-40	41-60	61-80	81-100	101+				Old uneven-aged Young uneven-aged	Plantation Provincial crown lands not inventoried
Québec BIOMASS84 FEDINV81 NATINV81										All productive forest lands

Conversion table for Ontario and Manitoba

Province or territory	NATINV86 Age Class									>>
	Even-aged							>	Uneven-aged -5	Missing value
	3 21-40	5 41-60	7 61-80	9 81-100 or 81+	11 101-120 or 101+	13 121-140 or 121+	15 141-160 or 141+ or 141-250	20 161+ or 251+		
Ontario Forest Resource Inventory	Actual age = "year of update" - "year of origin" ——>									Undetermined age class
	26 to <=45	46 to <=65	66 to <=85	86 to <=105	106 to <=125	126 to <=145	146 to <=165	166 and greater		
Ontario FEDINV81										All stocked forest records
Ontario CFB Petawawa, PNFI, and AECL									All-aged Two-storied	Other stocked forest records Plantations
Manitoba										All stocked productive forest records

Conversion table for Saskatchewan

Province or territory	NATINV86 Age Class >>									
	Even-aged >								Uneven-aged -5	Missing value
	3 21-40	5 41-60	7 61-80	9 81-100 or 81+	11 101-120 or 101+	13 121-140 or 121+	15 141-160 or 141+ or 141-250	20 161+ or 251+		
Saskatchewan TWP										All stocked productive forest records
Saskatchewan UTM	Year of photography minus year of origin >									Undetermined age class
Saskatchewan NTS-N										All stocked productive forest records
Saskatchewan NTS-S										All stocked productive forest records
Prince Albert National Park										All stocked productive forest records
Saskatchewan North Gap										All stocked productive forest records
Saskatchewan South Gap										All stocked productive forest records

Conversion table for Alberta

Province or territory	NATINV86 Age Class									
	Even-aged								Uneven-aged -5	Missing value
	3 21-40	5 41-60	7 61-80	9 81-100 or 81+	11 101-120 or 101+	13 121-140 or 121+	15 141-160 or 141+ or 141-250	20 161+ or 251+		
Alberta Management	For stands inventoried prior to July 1974, Age = 1986 - middle year of 20 year period of origin. For stands inventoried after July 1974, Age = 1986 - middle year of decade of origin.									Undetermined age class
Alberta Gap										All stocked productive forest records
Alberta FEDINV81										All stocked productive forest records
Alberta NATINV81 for FMU-A13 and Fishing Lake Metis Settlement										All stocked productive forest records

Conversion table for British Columbia/Yukon Territory/Northwest Territories

Province or territory	NATINV86AgeClass									
	Even-aged									
	3 21-40	5 41-60	7 61-80	9 81-100 or 81+	11 101-120 or 101+	13 121-140 or 121+	15 141-160 or 141+ or 141-250	20 161+ or 251+	Uneven-aged -5	Missing value
British Columbia Management	2 21-40	3 41-60	4 61-80	5 81-100	6 101-120	7 121-140	8 141-250	9 251+		Undetermined age class
British Columbia NATINV81									Uneven-aged	All other stocked forest records
Yukon Territory										All stocked forest records
Northwest Territories										All stocked forest records

Conversion table for Newfoundland

Province or territory	<<——NATINV86 Maturity Class——>>						
		<——Even-aged——					
	Species	Regeneration	Immature	Mature	Overmature	Uneven-aged	Missing value
Newfoundland Management			Age class 1 and 2 (0-40)	Age class 3, 4 or 7 (41-80)	Age class 5 (81+)		
Labrador Management			Age class 1 and 2 (0-40)	Age class 3 and 4 (41-150)	Age class 5 (151+)		
Newfoundland Global							All stocked productive forest records
Newfoundland Labrador intensive							All stocked productive forest records
Newfoundland Labrador extensive							All stocked productive forest records

Conversion table for Nova Scotia

Province or territory	<<—NATINV86 Maturity Class						—>>
		<— Even-aged			—		
	Species	Regeneration	Immature	Mature	Overmature	Uneven-aged	Missing value
Nova Scotia 3P inventory (eastern and central counties)		Regeneration	Immature Pole Young	Mature	Overmature	Age class 7	
Nova Scotia temporary sample plot inventory (western counties)		Age class 1	Age class 2 Age class 3	Age class 4 Age class 5	Age class 6	Age class 7	
Nova Scotia FEDINV81 - from the Nova Scotia temporary sample plot inventory maps (1965 to 1971)		Height class A (up to 16 feet)	Height class B (16 to 30 feet), and C (31 to 50 feet)	Height class D (over 50 feet)		Height class E (all heights)	
Nova Scotia FEDINV81 - from 1954 CFS [a]Forest Management Institute map		Regeneration	Immature	Mature			
Nova Scotia FEDINV81 - from CFS Forestry Statistics and Systems Branch photo reconnaissance		Regeneration	Immature	Mature			

Conversion table for Prince Edward Island and New Brunswick

Province or territory	<<—NATINV86 Maturity Class						—>>
		<—Even-aged			—	Uneven-aged	Missing value
	Species	Regeneration	Immature	Mature	Overmature		
Prince Edward Island							All stocked productive forest records
New Brunswick New inventory		Burn and softwood or hardwood visible Cutover, field windfall (as burn above) Plantation	Regenerating Old immature Young immature	Mature	Overmature		
New Brunswick NATINV81		Plantation	Maturity group and volume class 2,3 Maturity group 4 and volume class 1,2,3	Maturity group 1 and volume class 3,4,5 Maturity group 2 and volume class 4,5	Maturity group 3 and volume class 1,2		
New Brunswick FEDINV81		Regeneration	Immature	Mature	Overmature	Uneven-aged	

Conversion table for Québec

Province or territory	<<—NATINV86 Maturity Class						—>>
	<—Even-aged				—>	Uneven-aged	Missing value
	Species	Regeneration	Immature	Mature	Overmature		
Québec 2nd decennial		Regeneration	Immature	Mature		Old uneven-aged Young uneven-aged	All other stocked productive forest records Plantation Provincial crown lands not inventoried
Québec BIOMASS84							Undetermined maturity class
Québec FEDINV81 NATINV81		Regenerated	Immature	Irregular mature Regular mature Two-storied mature			

In future, maturity will be included.

Conversion table for Ontario and Manitoba

Province or territory	<< NATINV86Maturity Class						>>
		<- Even-aged					
	Species	Regeneration	Immature	Mature	Overmature	Uneven-aged	Missing value
Ontario Forest Resoruce Inventory		<- Determined from the working group and age ->					
	Spruce	1 to 30	31 to 80	81 to 120	121+		
	Pine - red, white	1 to 20	21 to 80	81 to 110	111+		
	Pine - jack, scots	1 to 20	21 to 60	61 to 90	91+		
	Balsam fir	1 to 20	21 to 50	51 to 70	71+		
	Hemlock	1 to 20	21 to 80	81 to 120	121+		
	Larch	1 to 20	21 to 60	61 to 90	91+		
	Cedar, other conifers	1 to 20	21 to 80	81 to 130	131+		
	Poplar	1 to 15	16 to 50	51 to 65	66+		
	Birch - white	1 to 15	16 to 50	51 to 70	71+		
	Birch - yellow, maple - hard	1 to 20	21 to 80	81 to 120	121+		
	Maple - soft	1 to 20	21 to 50	51 to 80	81+		
	Other hardwoods	1 to 20	21 to 60	61 to 90	91+		
Ontario FEDINV81		Regeneration	Immature	Mature			
Ontario CFB Petawawa PNFI, and AECL		Regeneration	Immature	Mature	Overmature	All-aged Two-storied	Plantations
Manitoba		Restocked naturally or artificially, with average height <3 m (cutting class 1)	Advanced young growth of post size, with average height >3 m (cutting class 2) Immature with merchantable volume growing at or near the maximum rate, with average height >10 m, and average dbh >9 cm (cutting class 3)	Mature (cutting class 4)	Overmature (cutting class 5)		

Conversion table for Saskatchewan

Province or territory*	<<——NATINV86Maturity Class——>>						
		<——Even-aged——					
	Species	Regeneration	Immature	Mature	Overmature	Uneven-aged	Missing value
Saskatchewan TWP	*From FEDINV81 data.	Regeneration*	Immature*	Mature*			Undetermined maturity class
Saskatchewan UTM			Each growth type is related to maturity class by age class. e.g.: Black spruce growth type with softwood black spruce species association: Age <=90 years	Age 91-109 years	Age >=110 years		
Saskatchewan NTS-N							All stocked productive forest records
Saskatchewan NTS-S			Immature	Mature Mature to overmature			
Prince Albert National Park		Regeneration	Immature	Mature	Overmature		
Saskatchewan North Gap		Regeneration	Immature	Mature	Overmature		
Saskatchewan South Gap			Immature	Mature			

Conversion table for Alberta

Province or territory	<<—— NATINV86 Maturity Class ——>>						
		<—— Even-aged ——					
	Species	Regeneration	Immature	Mature	Overmature	Uneven-aged	Missing value
Alberta Management	Deciduous (80 year rotation)	1-10	11-60	61-100	101+		
	Mixedwood and coniferous (120 year rotation)	1-20	21-80	81-120	121+		
Alberta Gap			Immature	Mature			
Alberta FEDINV81		Regeneration	Immature Young	Mature	Overmature		Undetermined age class
Alberta NATINV81 for FMU-A13 and Fishing Lake Metis Settlement		Regeneration	Immature Young	Mature	Overmature		Undetermined age class

Conversion table for British Columbia/Yukon Territory/Northwest Territories

Province or territory	<<—NATINV86 Maturity Class—>>						
		<—Even-aged—				Uneven-aged	Missing value
	Species	Regeneration	Immature	Mature	Overmature		
British Columbia Management		Age class 1 1-20 years	Immature	Mature	Age class 8 or 9 (over 141 years); if the 1st major species are cottonwood and aspen and in Forest Inventory Zone K or L		
British Columbia NATINV81		Regeneration	Immature	Mature	Overmature	Uneven-aged	Undetermined maturity class
Yukon Territory		Height-maturity class 1 (regeneration)	Height-maturity class 2 (immature)	Height-maturity class 3 (mature)			Undetermined maturity class
Northwest Territories		Age class 1 (regeneration)	Age class 2 (immature)	Age class 3 (mature)	Age class 4 (overmature)		Undetermined maturity class

Conversion table for Newfoundland

Province or territory	<< NATINV86 Forest Type			>>	<< NATINV86 Predominant Genus				
	Softwood	Mixedwood	Hardwood	Missing value	Spruce	Pine	Fir	Hemlock	Douglas-fir
Newfoundland management	Balsam fir Black spruce	Hardwood - softwood Softwood - hardwood	Trembling aspen White birch		Black spruce White spruce	Jack pine Red pine White pine	Balsam fir		
Labrador management	Balsam fir Black spruce	Hardwood - softwood Softwood - hardwood	Trembling aspen White birch		Black spruce White spruce		Balsam fir		
Newfoundland global	Softwood	Hardwood - softwood Softwood - hardwood	Hardwood						
Newfoundland Labrador intensive	Softwood	Mixedwood (Hardwood-softwood, Softwood-hardwood)	Hardwood						
Newfoundland Labrador extensive	Softwood	Mixedwood (Hardwood-softwood, Softwood-hardwood)	Hardwood						

Conversion table for Nova Scotia

Province or territory	<<— NATINV86 Forest Type			—>>	<<— NATINV86 Predominant Genus				—
	Softwood	Mixedwood	Hardwood	Missing value	Spruce	Pine	Fir	Hemlock	Douglas-fir
Nova Scotia 3-P inventory (eastern and central counties)	Softwood	Mixedwood	Hardwood						
Nova Scotia temporary sample plot inventory (western counties)	Softwood	Mixedwood	Hardwood						
Nova Scotia FEDINV81 - from the Nova Scotia temporary sample plot inventory maps (1965 to 1971)	Softwood	Mixedwood	Hardwood						
Nova Scotia FEDINV81 - from 1954 CFS "Forest Management Institute map	Softwood	Mixedwood	Hardwood						
Nova Scotia FEDINV81 - from CFS Forestry Statistics and Systems Branch photo reconnaissance	Softwood	Mixedwood	Hardwood						

Conversion table for Prince Edward Island and New Brunswick

Province or territory	<< NATINV86 Forest Type			>>	<< NATINV86 Predominant Genus				
	Softwood	Mixedwood	Hardwood	Missing value	Spruce	Pine	Fir	Hemlock	Douglas-fir
Prince Edward Island -	Plantation Volume strata 1,2,3	Volume strata 4,5,6,7,8,9	Volume strata 10,11,12		Black spruce Red spruce Spruce and fir in varied mixture White spruce		Balsam fir		
New Brunswick New inventory	Softwood Plantation with no species description Thinning with no species description	Hardwood - softwood Softwood - hardwood	Hardwood		Black spruce Dead spruce Red & White spruce Spruce-fir	Jack pine Red pine White pine	Balsam fir Dead fir Fir-spruce	Hemlock	
					Norway spruce* Red spruce* Unspecified spruce* White spruce*	Austrian pine* Lodgepole pine* Rigida pine* Unspecified pine*	Japanese fir* *plantations only		
New Brunswick NATINV81	Softwood	Hardwood - softwood Softwood - hardwood	Hardwood						
New Brunswick FEDINV81	Softwood	Mixedwood	Hardwood	Undetermined forest type					

Conversion table for Québec

Province or territory	<<—— NATINV86 Forest Type			——>>	<<—— NATINV86 Predominant Genus				——
	Softwood	Mixedwood	Hardwood	Missing value	Spruce	Pine	Fir	Hemlock	Douglas-fir
Québec 2nd decennial	Softwood	Mixedwood	Hardwood	Provincial crown lands not inventoried	Spruce	Pine	Fir	Hemlock	
Québec BIOMASS84	Softwood								
Québec FEDINV81	Softwood	Mixedwood	Hardwood						
Québec NATINV81	Softwood	Mixedwood	Hardwood	Undetermined forest type					

Conversion table for Ontario and Manitoba

Province or territory	<<—— NATINV86 Forest Type ——>>				<<—— NATINV86 Predominant Genus ——				
	Softwood	Mixedwood	Hardwood	Missing value	Spruce	Pine	Fir	Hemlock	Douglas-fir
Ontario Forest Resources Inventory	<—— determined from species composition ——>				<<—— Determined from species composition ——>>				
	>75% of basal area is coniferous	25-75% of basal area is coniferous	<25% of basal area is coniferous		Black spruce Spruce White spruce	Jack pine Red pine Scots pine White pine	Balsam fir	Hemlock	
Ontario FEDINV81	Softwood	Mixedwood	Hardwood						
Ontario CFB Petawawa, PNFI, and AECL	Softwood	Mixedwood	Hardwood	Plantations	Black spruce White spruce	Jack pine Red pine White pine	Balsam fir		
Manitoba	Softwood	Hardwood - Softwood Softwood - Hardwood	Hardwood		Black spruce White spruce	Jack pine Red pine Scots pine White pine	Balsam fir		

Conversion table for Saskatchewan

Province or territory	<< NATINV86 Forest Type >>				<< NATINV86 Predominant Genus				
	Softwood	Mixedwood	Hardwood	Missing value	Spruce	Pine	Fir	Hemlock	Douglas-fir
Saskatchewan TWP	Softwood	Hardwood- - softwood Softwood - hardwood	Hardwood						
Saskatchewan UTM	Softwood	Hardwood - softwood Softwood - hardwood	Hardwood		Black spruce White spruce	Jack pine Lodgepole pine	Balsam fir		
Saskatchewan NTS-N	Softwood	Hardwood - softwood Softwood - hardwood	Hardwood		Black spruce White spruce	Jack pine Lodgepole pine			
Saskatchewan NTS-S	Softwood	Hardwood - softwood Softwood - hardwood	Hardwood		Black spruce White spruce	Jack pine Lodgepole pine			
Prince Albert National Park	Softwood	Mixedwood	Hardwood						
Saskatchewan North Gap	Softwood	Mixedwood	Hardwood		Spruce	Pine			
Saskatchewan South Gap	Softwood	Mixedwood	Hardwood		Spruce				

Conversion table for Alberta

Province or territory	<<—— NATINV86 Forest Type ——			——>>	<<—— NATINV86 Predominant Genus ——				
	Softwood	Mixedwood	Hardwood	Missing value	Spruce	Pine	Fir	Hemlock	Douglas-fir
Alberta Management	Conifer	Coniferous/ deciduous Deciduous/ coniferous	Deciduous		Spruce	Pine	Fir		Douglas-fir
Alberta Gap	Softwood	Mixedwood	Hardwood		Spruce	Pine			
Alberta FEDINV81	Softwood All other working groups	Aspen blend working group Hardwood - softwood Softwood - hardwood	Aspen working group Hardwood	Undetermined forest type					
Alberta NATINV81 for FMU-A13 and Fishing Lake Metis Settlement	Softwood All other working groups	Mixedwood	Aspen working group Hardwood						

Conversion table for British Columbia/Yukon Territory/Northwest Territories

Province or territory	<<——— NATINV86 Forest Type ———>>				<<——— NATINV86 Predominant Genus ———				
	Softwood	Mixedwood	Hardwood	Missing value	Spruce	Pine	Fir	Hemlock	Douglas-fir
British Columbia Management	1st two major species are softwood	Softwood - hardwood or hardwood - softwood for 1st two major species	1st two major species are hardwood		First major species: Black spruce	Limber pine Lodgepole pine Ponderosa pine Western white pine Whitebark pine	Alpine fir Amabilis fir Grand fir	Mountain hemlock Western hemlock	Douglas-fir
British Columbia NATINV81	Softwood	Mixedwood	Hardwood						
Yukon Territory	Cover type S (softwood)	Cover type M (mixedwood)	Cover type H (hardwood)						
Northwest Territories	Softwood	Mixedwood	Hardwood						

Conversion table for Newfoundland

Province or territory	NATINV86 Predominant Genus (cont'd) >>								
	Larch	Cedar and other conifers	Unspecified conifers	Poplar	Birch	Maple	Other broad-leaved species	Unspecified broad-leaved species	Missing value
Newfoundland Management	Larch			Trembling aspen	White birch Yellow birch				
Labrador Management	Larch				White birch				
Newfoundland Global			Softwood Softwood - hardwood					Hardwood Hardwood - softwood	
Newfoundland Labrador intensive			Softwood		Hardwood				Mixedwood
Newfoundland Labrador extensive			Softwood		Hardwood				Mixedwood

Conversion table for Prince Edward Island and New Brunswick

Province or territory	NATINV86 Predominant Genus (cont'd) >>								
	Larch	Cedar and other conifers	Unspecified conifers	Poplar	Birch	Maple	Other broad-leaved species	Unspecified broad-leaved species	Missing value
Prince Edward Island	Larch (eastern and European larch)		Plantation	Intolerant hardwoods (largely poplar but also white birch) Poplar	Grey birch White birch Yellow birch	Red maple Sugar maple Tolerant hardwoods (largely maple, but also yellow birch, beech, red oak)	Beech Brown ash (black ash) Elm Red oak White ash		
New Brunswick New inventory	Larch	Cedar	Plantation ‡ Thinning ‡ Unspecified conifers ‡ with no species description					Hardwoods Intolerant hardwoods Tolerant hardwoods	
	European larch* Japanese larch*	Western red cedar* *plantations only	Multiple species*				Ash* Beech* Black alder* Black locust* Honey locust* Ironwood* Oak*		
New Brunswick NATINV81			Softwood					Hardwood	Mixedwood
New Brunswick FEDINV81			Softwood					Hardwood	Mixedwood Undetermined forest type

Conversion table for Nova Scotia

Province or territory	NATINV86 Predominant Genus (cont'd) >>								
	Larch	Cedar and other conifers	Unspecified conifers	Poplar	Birch	Maple	Other broad-leaved species	Unspecified broad-leaved species	Missing value
Nova Scotia 3-P inventory (eastern and central counties)			Softwood					Hardwood	Mixedwood
Nova Scotia temporary sample plot inventory (western counties)			Softwood					Hardwood	Mixedwood
Nova Scotia FEDINV81 - from the Nova Scotia temporary sample plot inventory maps (1965 to 1971)			Softwood					Hardwood	Mixedwood
Nova Scotia FEDINV81 - from 1954 CFS Forest Management Institute map			Softwood					Hardwood	Mixedwood
Nova Scotia FEDINV81 - from CFS Forestry Statistics and Systems Branch photo reconnaissance			Softwood					Hardwood	Mixedwood

Conversion table for Québec

Province or territory	NATINV86 Predominant Genus (cont'd) >>								
	Larch	Cedar and other conifers	Unspecified conifers	Poplar	Birch	Maple	Other broad-leaved species	Unspecified broad-leaved species	Missing value
Québec 2nd decennial	Larch	Cedar		Poplar	Birch	Maple	Alder Ash Basswood Elm Hop-hornbeam Oak		Plantation Provincial crown lands not inventoried
Québec BIOMASS84 FEDINV81 NATINV81	Predominant genus was unintentionally all coded as missing value. In future softwood, mixedwood, and hardwood forest types would go into unspecified conifers, missing value, and specified broad-leaved species respectively.								All stocked productive forest lands

Conversion table for Ontario and Manitoba

Province or territory	NATINV86 Predominant Genus (cont'd) >>								
	Larch	Cedar and other conifers	Unspecified conifers	Poplar	Birch	Maple	Other broad-leaved species	Unspecified broad-leaved species	Missing value
Ontario Forest Resource Inventory	Larch	Cedar Other conifers		Balsam poplar (recorded as yellow birch in MU 835 - Rainy River) Poplar	White birch Yellow birch	Hard maple Soft maple	Ash Basswood Beech Black ash Black cherry Cherry Elm Oak Other hardwoods Red oak White oak		Undetermined predominant genus
Ontario Federal Inventory 1981	Predominant genus was unintentionally all coded as missing value. In future softwood, mixedwood, and hardwood forest types would go into unspecified conifers, missing value, and unspecified broad-leaved species respectively.								All stocked productive forest records
Ontario CFB Petawawa PNFI, and AECL	Tamarack	White cedar		Largetooth aspen Trembling aspen	White birch Yellow birch	Red maple Sugar maple	Basswood Beech Black ash Black cherry Ironwood Pin cherry Red oak White ash White elm White oak		Plantations
Manitoba	Tamarack	Eastern white cedar		Balsam poplar Eastern cottonwood Largetooth aspen Trembling aspen	White birch	Black maple	Basswood Black ash Bur oak Hackberry Hop-hornbeam Red ash White elm Willow	Unspecified broad-leaved species	

Conversion table for Saskatchewan

Province or territory	NATINV86 Predominant Genus (cont'd) >>								
	Larch	Cedar and other conifers	Unspecified conifers	Poplar	Birch	Maple	Other broad-leaved species	Unspecified broad-leaved species	Missing value
Saskatchewan TWP	Predominant genus was unintentionally all coded as missing value. In future softwood, mixedwood, and hardwood forest types would go into unspecified conifers, missing value, and unspecified broad-leaved species respectively.								All stocked productive forest records
Saskatchewan UTM	Tamarack			Balsam poplar Trembling aspen	White birch	Black maple	Bur oak Red ash White elm		
Saskatchewan NTS-N				Balsam poplar Trembling aspen	White birch				
Saskatchewan NTS-S				Balsam poplar Trembling aspen					
Prince Albert National Park	Predominant genus was unintentionally all coded as missing value. In future softwood, mixedwood, and hardwood forest types would go into unspecified conifers, missing value, and unspecified broad-leaved species respectively.								All stocked productive forest records
Saskatchewan North Gap	Larch			Poplar					
Saskatchewan South Gap				Poplar					

Conversion table for Alberta

Province or territory	NATINV86 Predominant Genus (cont'd) >>								
	Larch	Cedar and other conifers	Unspecified conifers	Poplar	Birch	Maple	Other broad-leaved species	Unspecified broad-leaved species	Missing value
Alberta Management	Larch			Poplar	Birch			Unspecified broad-leaved species	Undetermined predominant genus
Alberta Gap				Poplar					
Alberta FEDINV81	Predominant genus was unintentionally all coded as missing value. In future softwood, mixedwood, and hardwood forest types would go into unspecified conifers, missing value, and unspecified broad-leaved species respectively.								All stocked productive forest records
Alberta NATINV81 for FMU-A13 and Fishing Lake Metis Settlement	Predominant genus was unintentionally all coded as missing value. In future softwood, mixedwood, and hardwood forest types would go into unspecified conifers, missing value, and unspecified broad-leaved species respectively.								All stocked productive forest records

Conversion table for British Columbia/Yukon Territory/Northwest Territories

Province or territory	NATINV86 Predominant Genus (cont'd) >>								
	Larch	Cedar and other conifers	Unspecified conifers	Poplar	Birch	Maple	Other broad-leaved species	Unspecified broad-leaved species	Missing value
British Columbia Management	Alpine larch Tamarack Western larch	Western red cedar Yellow cedar		Aspen Cottonwood	White birch	Broad-leaved maple	Alder		Undetermined predominant genus
British Columbia NATINV81									All stocked productive forest records
Yukon Territory	Predominant genus was unintentionally all coded as missing valu.e In future softwood, mixedwood, and hardwood forest types would go into unspecified conifers, missing value, and unspecified broad-leaved species respectively.								All stocked productive forest records
Northwest Territories	Predominant genus was unintentionally all coded as missing valu.e In future softwood, mixedwood, and hardwood forest types would go into unspecified conifers, missing value, and unspecified broad-leaved species respectively.								All stocked productive forest records

Conversion table for Newfoundland

Province or territory	<<— NATINV86 Species Group —										
	Black and red spruce	Other spruce	White pine	Jack pine group	Other pine	Fir	Hemlock	Douglas-fir	Larch	Cedar and other conifers	Unspecified conifers
Newfoundland Management	Black spruce	White spruce	White pine	Missing value if predominant genus is jack pine	Other pine (red pine occurs naturally; jack pine occurs only in plantations)	Balsam fir			Larch		
Labrador Management	Black spruce	White spruce				Balsam fir			Larch		
Newfoundland Global	Black spruce	White spruce	White pine (red and white pine)		Missing value if white pine volume >0	Balsam fir			Larch		
Newfoundland Labrador intensive	Missing value if softwood volume >0	Missing value if softwood volume >0				Missing value if softwood volume >0			Missing value if softwood volume >0		Softwood (black spruce, white spruce, balsam fir, larch)
Newfoundland Labrador extensive	Missing value if softwood volume >0	Missing value if softwood volume >0				Missing value if softwood volume >0			Missing value if softwood volume >0		Softwood (black spruce, white spruce, balsam fir, larch)

Conversion table for Nova Scotia

Province or territory	<<——NATINV86 Species Group——										
	Black and red spruce	Other spruce	White pine	Jack pine group	Other pine	Fir	Hemlock	Douglas-fir	Larch	Cedar and other conifers	Unspecified conifers
Nova Scotia 3P inventory (eastern and central counties)	Spruce (black and red)	White spruce	White pine	Jack pine	Red pine Scots pine	Fir	Hemlock		Larch		
Nova Scotia temporary sample plot inventory (western counties)	Spruce (black and red)	White spruce	White pine	Jack pine	Red pine Scots pine	Fir	Hemlock		Larch	Cedar	
Nova Scotia FEDINV81 - from the Nova Scotia temporary sample plot inventory maps (1965 to 1971)	For all species groups except Douglas-fir and unspecified conifers: volumes are coded as missing for immature and older, and zero volume for regeneration.										
Nova Scotia FEDINF81 - from 1954 CFS "Forest Mangement Institute map	For all species groups except Douglas-fir and unspecified conifers: volumes are coded as missing for immature and mature, and zero volume for regeneration.										
Nova Scotia FEDINV81 - from CFS Forestry Statistics and Systems Branch photo reconnaissance	For all species groups except Douglas-fir and unspecified conifers: volumes are coded as missing for immature and mature, and zero volume for regeneration.										

Conversion table for Prince Edward Island and New Brunswick

Province or territory	<< NATINV86 Species Group										
	Black and red spruce	Other spruce	White pine	Jack pine group	Other pine	Fir	Hemlock	Douglas-fir	Larch	Cedar and other conifers	Unspecified conifers
Prince Edward Island	Black spruce Red spruce	White spruce	White pine	Jack pine	Red pine	Balsam fir	Hemlock		Larch	Cedar	
	Missing value if plantation	Missing value if plantation	Missing value if plantation	Missing value if plantation	Missing value if plantation	Missing value if plantation			Missing value if plantation	Missing value if plantation	
New Brunswick New inventory	Spruce 80% Black and red spruce	20% White spruce	Pine %* White pine	% Jack pine	% Red pine	Fir	Other Softwood % Hemlock		% Larch	% Cedar	
New Brunswick NATINV81	Spruce 80% Black and red spruce	20% White spruce	Pine %* White pine	% Jack pine	% Red pine	Fir	Hemlock		Coniferous unspecified	Cedar	
New Brunswick FEDINV81	Spruce 80% Black and red spruce	20% White spruce	Pine %* White pine	% Jack pine	% Red pine	Fir	Hemlock		Coniferous unspecified	Cedar	
	Missing value if spruce volume >0	Spruce	Missing value if pine volume >0	Missing value if pine volume >0	Pine	Fir	Hemlock		Coniferous unspecified (larch)	Cedar	

*Percentage is based on Table 6 by Resource Region from Dept. of Natural Resources (1981) 'New Brunswick Forest Inventory'

Conversion table for Québec

Province or territory	<<——NATINV86 Species Group——										
	Black and red spruce	Other spruce	White pine	Jack pine group	Other pine	Fir	Hemlock	Douglas-fir	Larch	Cedar and other conifers	Unspecified conifers
Québec 2nd decennial	Black spruce Red spruce	Norway spruce White spruce	White pine	Jack pine	Pitch pine Red pine Scots pine	Balsam fir	Eastern hemlock		Tamarack	Eastern white cedar	
	For all species groups except Douglas-fir and unspecified conifers: volume is coded as missing if plantation or for provincial crown lands not inventoried.										
Québec FEDINV81 NATINV81	Missing value if spruce volume >0	Black spruce Norway spruce Red spruce White spruce	Missing value if pine volume >0	Missing value if pine volume >0	Grey pine Pitch pine Red pine Scots pine White pine	Balsam fir	Eastern hemlock			Cedar (eastern white cedar)	
	For all species groups except Douglas-fir and unspecified conifers: volume is coded as missing if plantation.										
Québec BIOMASS84	Densities used to convert biomass of merchantable stem wood to volume, where: Volume [$m^3 ha^{-1}$] = Biomass [tonnes ha^{-1}] / Density [tonnes m^{-3}]										
		0.37			0.37	0.34	0.41		0.37	0.31	
	For all applicable species groups: volume is coded as missing.										

Conversion table for Ontario and Manitoba

Province or territory	<<—NATINV86 Species Group—										
	Black and red spruce	Other spruce	White pine	Jack pine group	Other pine	Fir	Hemlock	Douglas-fir	Larch	Cedar and other conifers	Unspecified conifers
Ontario Forest Resource Inventory	Black spruce	White spruce Spruce	White pine	Jack pine	Red pine Scots pine	Balsam	Hemlock		Larch	Cedar Other conifers	
Ontario FEDINV81	For all species groups except Douglas-fir and unspecified conifers: volume is coded as missing.										
Ontario CFB Petawawa, PNFI, and AECL	Black spruce	Spruce (white spruce)	White pine	Jack pine	Pine (red pine)	Balsam fir	Hemlock		Tamarack	White cedar	
	For all species groups except Douglas-fir and unspecified conifers: volume is coded as missing if plantation.										
Manitoba	Black spruce	White spruce		Jack pine	Red pine Scots pine	Balsam fir			Tamarack	Eastern white cedar	

Conversion table for Saskatchewan

Province or territory	<<———————— NATINV86 Species Group										
	Black and red spruce	Other spruce	White pine	Jack pine group	Other pine	Fir	Hemlock	Douglas-fir	Larch	Cedar and other conifers	Unspecified conifers
Saskatchewan TWP		White spruce		Jack pine Lodgepole pine		Balsam fir			Tamarack		
Saskatchewan UTM	Black spruce	White spruce		Jack pine Lodgepole pine		Balsam fir			Tamarack		
Saskatchewan NTS-N	Black spruce	White spruce		Jack pine Lodgepole pine		Balsam fir			Tamarack		
Saskatchewan NTS-S	Black spruce	White spruce		Jack pine Lodgepole pine					Tamarack		
Prince Albert National Park	Missing value if stocked forest	Missing value if stocked forest		Missing value if stocked forest		Missing value if stocked forest			Missing value if stocked forest		
Saskatchewan North Gap	Missing value if conifer volume >0	Missing value if conifer volume >0		Missing value if conifer volume >0		Missing value if conifer volume >0			Missing value if conifer volume >0		Conifers
Saskatchewan South Gap	Missing value if conifer volume >0	Missing value if conifer volume >0		Missing value if conifer volume >0		Missing value if conifer volume >0			Missing value if conifer volume >0		Conifers

Conversion table for Alberta

Province or territory	NATINV86 Species Group Black and red spruce	Other spruce	White pine	Jack pine group	Other pine	Fir	Hemlock	Douglas-fir	Larch	Cedar and other conifers	Unspecified conifers
Alberta Management	Black spruce	Engelmann spruce White spruce		Jack pine Lodgepole pine		Balsam fir		Douglas-fir	Alpine larch Tamarack Western larch		
Alberta Gap	For all species groups except hemlock and unspecified conifers: volume is coded as missing if coniferous volume >0.		*							*	Coniferous species
Alberta FEDINV81	For all species groups except hemlock and unspecified conifers: volume was unintentionally coded as zero instead of missing value.		*							*	
Alberta NATINV81 FMU-A13 and Fishing Lake Metis Settlement	Missing value if spruce volume >0	Spruce	Missing value if pine volume >0 *	Missing value if pine volume >0	Pine	Balsam fir					

*White pine and cedar volumes were unintentionally coded as missing value. This was realized too late to correct. They should be coded as zero volume.

Conversion table for British Columbia/Yukon Territory/Northwest Territories

Province or territory	<<——NATINV86 Species Group——										
	Black and red spruce	Other spruce	White pine	Jack pine group	Other pine	Fir	Hemlock	Douglas-fir	Larch	Cedar and other conifers	Unspecified conifers
British Columbia Management		Engelmann spruce Sitka spruce White spruce	Western white pine	Jack pine Lodgepole pine	Limber pine Ponderosa pine Whitebark pine	Alpine fir Amabilis fir Grand fir	Mountain hemlock Western hemlock	Douglas-fir	Alpine larch Tamarack Western larch	Western red cedar Yellow cedar	
British Columbia NATINV81	For all species groups except unspecified conifers: volumes are coded as missing.										
Yukon Territory	Black spruce	White spruce		Lodgepole pine							Unspecified softwood
Northwest Territories	Missing value if coniferous volume >0	Missing value if coniferous volume >0		Missing value if coniferous volume >0		Missing value if coniferous volume >0			Missing value if coniferous volume >0		Coniferous unspecified

Conversion table for Newfoundland

Province or territory	NATINV86 Species Group (cont'd) >> Trembling aspen	Other poplar	Yellow birch	Other birch	Sugar and black maple	Other maple	Other broad-leaved	Unspecified broad-leaved
Newfoundland Management	Trembling aspen		Yellow birch	White birch		Red maple	Other hardwoods (black ash)	
Labrador Management	Trembling aspen			White birch			Other hardwoods (black ash)	
Newfoundland Global	Missing value if other hardwood volume >0	Missing value if other hardwood volume >0	Missing value if birch volume >0	Birch (white (white and yellow birch)		Missing value if other hardwood volume >0	Other hardwoods (red maple, black ash, trembling aspen, and balsam poplar)	
Newfoundland Labrador intensive	Missing value if hardwood volume >0	Missing value if hardwood volume >0		Missing value if hardwood volume >0				Hardwood (white birch, aspen, and balsam poplar)
Newfoundland Labrador extensive	Missing value if hardwood volume >0	Missing value if hardwood volume >0		Missing value if hardwood volume >0				Hardwood (white birch, aspen, and balsam poplar)

Conversion table for Nova Scotia

Province or territory	NATINV86 Species Group (cont'd) >>							
	Trembling aspen	Other poplar	Yellow birch	Other birch	Sugar and black maple	Other maple	Other broad-leaved	Unspecified broad-leaved
Nova Scotia 3P inventory (eastern and central counties)	Aspen		Yellow birch	Grey birch White birch	Sugar maple	Red maple	Ash Beech Black cherry Elm Oak	
Nova Scotia temporary sample plot inventory (western counties)	Aspen		Yellow birch	Grey birch White birch	Sugar maple	Red maple	Ash Beech Black cherry Elm Oak	
Nova Scotia FEDINV81 - from the Nova Scotia temporary sample plot inventory maps (1965 to 1971)	For all species groups except other poplar and unspecified broad-leaved: volume is coded as missing for immature and older, and zero for regeneration.							
Nova Scotia FEDINV81 - from 1954 CFS "Forest Management Institute map	For all species groups except other poplar and unspecified broad-leaved: volume is coded as missing for immature and mature, and zero for regeneration.							
Nova Scotia FEDINV81 - from CFS Forestry Statistics and Systems Branch photo reconnaissance	For all species groups except other poplar and unspecified broad-leaved: volume is coded as missing for immature and mature, and zero for regeneration.							

Conversion table for Prince Edward Island and New Brunswick

Province or territory	NATINV86Species Group (cont'd) >>							
	Trembling aspen	Other poplar	Yellow birch	Other birch	Sugar and black maple	Other maple	Other broad-leaved	Unspecified broad-leaved
Prince Edward Island	Poplar (largely trembling aspen but may include other poplars)	Missing value if poplar volume >0	Yellow birch	White birch	Hard maple	Red maple	Beech Brown ash (black ash) Red oak White ash	
New Brunswick New inventory	Intolerant hardwoods							
	% Aspen	Missing value if aspen volume >0		% White birch				
			Tolerant hardwoods					
			% Yellow birch		% Sugar maple	% Red maple	% Beech Other hardwoods	
New Brunswick NATINV81	Poplar	Missing value if aspen volume >0	Birch % Yellow birch	% White birch	Maple % Sugar maple	% Red maple	Deciduous unspecified	
New Brunswick FEDINV81	Poplar	Missing value if aspen volume >0	Birch % Yellow birch	% White birch	Maple % Sugar maple	% Red maple	Deciduous unspecified	
	Aspen/ poplar	Missing value if aspen volume >0	Missing value if birch volume >0	Birch	Missing value if maple volume >0	Maple	Deciduous unspecified	

Conversion table for Québec

Province or territory	NATINV86Species Group (cont'd) >>							
	Trembling aspen	Other poplar	Yellow birch	Other birch	Sugar and black maple	Other maple	Other broad-leaved	Unspecified broad-leaved
Québec 2nd decennial	Trembling aspen	Balsam poplar Eastern cottonwood Hybrid poplar Largetooth aspen	Yellow birch	Grey birch White birch	Sugar maple	Manitoba maple Mountain maple Red maple Silver maple Striped maple	Basswood Beech Bitternut hickory Black ash Black cherry Bur oak Butternut Choke cherry Crab apple Hazel tree Hop-hornbeam Mountain-ash Pin cherry Red ash	Other Broad-leaved (cont'd) Red oak Rock elm Serviceberry Shagbark hickory Slippery elm Swamp white oak White ash White elm White oak Willow
	For all species groups except unspecified broad-leaved: volume is coded as missing if plantation or for provincial crown lands not inventoried.							
Québec FEDINV81 NATINV81	Missing value if aspen volume >0	Balsam poplar Eastern cottonwood Hybrid poplar Largetooth aspen Trembling aspen	Missing value if birch volume >0	Grey birch White birch Yellow birch	Missing value if maple volume >0	Manitoba maple Mountain maple Red maple Silver maple Striped maple	Basswood Beech Bitternut hickory Black ash Black cherry Bur oak Butternut Choke cherry Crab apple Hazel tree Hop-hornbeam Mountain-ash Pin cherry Red ash	Other Broad-leaved (cont'd) Red oak Rock elm Serviceberry Shagbark hickory Slippery elm Swamp white oak White ash White elm White oak Willow
	For all species groups except unspecified broad-leaved: volume is coded as missing if plantation.							
Québec BIOMASS84	In future densities can be used to convert biomass of merchantable stem wood to volume, where: Volume [m3 ha^{-1}] = Biomass [tonnes ha^{-1}] / Density [tonnes m^{-3}]							
		0.37		0.51		0.59	0.5	
	For all applicable species groups: volume is coded as missing.							

Conversion table for Ontario and Manitoba

Province or territory	NATINV86Species Group (cont'd) >>							
	Trembling aspen	Other poplar	Yellow birch	Other birch	Sugar and black maple	Other maple	Other broad-leaved	Unspecified broad-leaved
Ontario Forest Resource Inventory	Missing value if other poplar volume >0	Balsam poplar Poplar trembling aspen and largetooth aspen)	Yellow birch	White birch	Missing value if hard and soft maple volume >0	Hard maple* Soft maple	Ash Oak Other hardwoods	
						*Hard maple was unintentionally put in the other maple field.		
Ontario FEDINV81	For all species groups except unspecified broad-leaved: volume is coded as missing.							
Ontario CFB Petawawa, PNFI, and AECL	Missing value if aspen volume >0	Aspen (largetooth aspen; trembling aspen; balsam poplar)	Yellow birch	Birch (white birch)	Sugar maple	Red maple	Basswood Beech Black ash Black cherry Ironwood Pin cherry Red oak White ash White elm White oak	
	For all species groups except unspecified broad-leaved: volume is coded as missing if plantation.							
Manitoba	Trembling aspen	Balsam poplar Eastern cottonwood Largetooth aspen		White birch			Basswood Black ash Bur oak Hackberry Hop-hornbeam Red ash White elm Willow	

Conversion table for Saskatchewan

Province or territory	NATINV86 Species Group (cont'd) >>							
	Trembling aspen	Other poplar	Yellow birch	Other birch	Sugar and black maple	Other maple	Other broad-leaved	Unspecified broad-leaved
Saskatchewan TWP		Balsam poplar		White birch				
Saskatchewan UTM	Trembling aspen	Balsam poplar		White birch		Black maple (Manitoba maple)	Bur oak Red ash White elm	
Saskatchewan NTS-N	Trembling aspen	Balsam poplar		White birch				
Saskatchewan NTS-S	Trembling aspen	Balsam poplar		White birch				
Prince Albert National Park	Missing value if stocked forest	Missing value if stocked forest		Missing value if stocked forest		Missing value if stocked forest	Missing value if stocked forest	
Saskatchewan North Gap	Missing value if broad-leaf volume >0	Missing value if broad-leaf volume >0		Missing value if broad-leaf volume >0		Missing value if broad-leaf volume >0	Missing value if broad-leaf volume >0	Broad-leaved species
Saskatchewan South Gap	Missing value if broad-leaf volume >0	Missing value if broad-leaf volume >0		Missing value if broad-leaf volume >0		Missing value if broad-leaf volume >0	Missing value if broad-leaf volume >0	Broad-leaved species

Conversion table for Alberta

Province or territory	NATINV86Species Group (cont'd) >>							
	Trembling aspen	Other poplar	Yellow birch	Other birch	Sugar and black maple	Other maple	Other broad-leaved	Unspecified broad-leaved
Alberta Management	Trembling aspen	Balsam poplar		White birch				
Alberta Gap	Missing value if broad-leaved volume >0	Missing value if broad-leaved volume >0		Missing value if broad-leaved volume >0		Missing value if broad-leaved volume >0 ‡	Missing value if broad-leaved volume >0 ‡	Broad-leaved species
Alberta FEDINV81	For all species except yellow birch, sugar maple, and unspecified broad-leaved species the volumes are coded as missing value.					‡	‡	
Alberta NATINV81 for FMU-A13 and Fishing Lake Metis Settlement	Missing value if aspen/poplar volume >0	Aspen/ poplar						

‡Other maple and other broad-leaved volumes were unintentionally coded as missing value. This was realized too late to correct. They should be coded as zero volume.

Conversion table for British Columbia/Yukon Territory/Northwest Territories

Province or territory	NATINV86 Species Group (cont'd) >>							
	Trembling aspen	Other poplar	Yellow birch	Other birch	Sugar and black maple	Other maple	Other broad-leaved	Unspecified broad-leaved
British Columbia Management	Trembling aspen	Balsam poplar Black cottonwood		Alaska paper birch White birch		Broad-leaved maple	Red alder	
British Columbia NATINV81	Missing value if stocked forest	Missing value if stocked forest		Missing value if stocked forest		Missing value if stocked forest	Missing value if stocked forest	
Yukon Territory	Trembling aspen	Poplar		White birch				Unspecified hardwood
Northwest Territories	Missing value if deciduous volume >0	Missing value if deciduous volume >0		Missing value if deciduous volume >0				Deciduous unspecified

Appendix 2 Exchange formats for the main file

Table 1 gives the format by which data can be exchanged. The file length is 223 characters. Table 2 describes an exchange format that is identical except that 10 columns are added as field 3 for the stand number and other identifiers. This latter file is intended for use when checking for errors and where the identifiers are required to isolate individual records in the source data. The file length is 233 characters in this stand-level file.

The software used to quality check the data files can read either of the above formats. Data are usually submitted using the former format. The records are aggregated to eliminate redundant combinations of classifiers within each cell code. The records are also sorted into ascending order by cell code and then by the classifiers. The software used for this aggregation step also handles both of the above mentioned formats but creates records in the 223-length format only.

Data are available from the inventory in compacted versions. Any number of classifiers can be omitted and the volumes totaled to coniferous and broad-leaved subtotals. The records are also aggregated to remove records with redundant combinations within one cell code. There is one standard version of a compacted file. It is described in Table 3.

Table 4 shows the combinations of codes to use for all the different situations. Particular attention is paid in Table 4 to how missing value, not applicable and zero volume records are used.

Table 1. **Exchange format of the main file**

Variable	Field No.	Column		Format	Picture[a]	Codes
		Start	End			
LOCATION CODES						
Prov./terr.	1	1	2	I2	99	1-12
Cell reference	2	3	10	A8	XXXXXXXX	variable
CLASSIFICATION ATTRIBUTES						
Data source	3	11	11	I1	9	1-7,8
Ownership	4	12	12	I1	9	1-7,8
Status	5	13	13	I1	9	1-4,8
Land class	6	14	14	I1	9	1-6,8
Site quality	7	15	15	I1	9	1-7,8,9
Stocking	8	16	16	I1	9	1-5,8,9
Cause of disturbance	9	17	17	I1	9	1-4,8,9
Age	10	18	19	I2	99	0-20,-5,-8,-9
Maturity	11	20	20	I1	9	1-5,8,9
Forest type	12	21	21	I1	9	1-3,8,9
Predominant genus	13	22	23	I2	99	1-13,-8,-9
Year of information	14	24	25	I2	99	46-86,-8
NUMERICAL ATTRIBUTES						
Area (ha)	15	26	33	I8[b]	99999999V	0-99999999
Pulpwood[c] volumes (m^3/ha, 1 sig. digit):						
Black and red spruce	16	34	38	I5[d]	9999V9	0-9999.9,-8.,-9.[e]
Other spruce	17	39	43	I5	9999V9	0-9999.9,-8.,-9.
White pine	18	44	48	I5	9999V9	0-9999.9,-8.,-9.
Jack, lodgepole and shore pine	19	49	53	I5	9999V9	0-9999.9,-8.,-9.
Other pine	20	54	58	I5	9999V9	0-9999.9,-8.,-9.
Fir	21	59	63	I5	9999V9	0-9999.9,-8.,-9.
Hemlock	22	64	68	I5	9999V9	0-9999.9,-8.,-9.
Douglas-fir	23	69	73	I5	9999V9	0-9999.9,-8.,-9.
Larch	24	74	78	I5	9999V9	0-9999.9,-8.,-9.
Cedar and other conifers	25	79	83	I5	9999V9	0-9999.9,-8.,-9.
Unspecified conifers	26	84	88	I5	9999V9	0-9999.9,-8.,-9.
Trembling aspen	27	89	93	I5	9999V9	0-9999.9,-8.,-9.
Other poplar	28	94	98	I5	9999V9	0-9999.9,-8.,-9.
Yellow birch	29	99	103	I5	9999V9	0-9999.9,-8.,-9.
Other birch	30	104	108	I5	9999V9	0-9999.9,-8.,-9.
Sugar and black maple	31	109	113	I5	9999V9	0-9999.9,-8.,-9.
Other maple	32	114	118	I5	9999V9	0-9999.9,-8.,-9.
Other broad-leaved species	33	119	123	I5	9999V9	0-9999.9,-8.,-9.
Unspecified broad-leaved species	34	124	128	I5	9999V9	0-9999.9,-8.,-9.
Sawwood volumes (m^3/ha, 1 sig. digit):						
Black and red spruce	35	129	133	I5	9999V9	0-9999.9,-8.,-9.
Other spruce	36	134	138	I5	9999V9	0-9999.9,-8.,-9.
White pine	37	139	143	I5	9999V9	0-9999.9,-8.,-9.
Jack, lodgepole and shore pine	38	144	148	I5	9999V9	0-9999.9,-8.,-9.
Other pine	39	149	153	I5	9999V9	0-9999.9,-8.,-9.
Fir	40	154	158	I5	9999V9	0-9999.9,-8.,-9.
Hemlock	41	159	163	I5	9999V9	0-9999.9,-8.,-9.
Douglas-fir	42	164	168	I5	9999V9	0-9999.9,-8.,-9.
Larch	43	169	173	I5	9999V9	0-9999.9,-8.,-9.
Cedar and other conifers	44	174	178	I5	9999V9	0-9999.9,-8.,-9.
Unspecified conifers	45	179	183	I5	9999V9	0-9999.9,-8.,-9.
Trembling aspen	46	184	188	I5	9999V9	0-9999.9,-8.,-9.
Other poplar	47	189	193	I5	9999V9	0-9999.9,-8.,-9.
Yellow birch	48	194	198	I5	9999V9	0-9999.9,-8.,-9.
Other birch	49	199	203	I5	9999V9	0-9999.9,-8.,-9.
Sugar and black maple	50	204	208	I5	9999V9	0-9999.9,-8.,-9.
Other maple	51	209	213	I5	9999V9	0-9999.9,-8.,-9.
Other broad-leaved species	52	214	218	I5	9999V9	0-9999.9,-8.,-9.
Unspecified broad-leaved species	53	219	223	I5	9999V9	0-9999.9,-8.,-9.

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[a] Picture codes are as follows:
9 Numeric;
X Alphanumeric;
V Position holder (i.e. an implicit rather than a hard decimal point).

[b] Area not to have any implied decimal point, to be read F8.0.

[c] Pulpwood volumes include sawwood size classes.

[d] Volumes have 1 significant digit implied, to be read F5.1.

[e] Programmers should note that an integer -80 or -90 is used in the volume fields, so that it will be interpreted as a -8. or -9. when read.

Table 2. Exchange format of the stand-level main file

Variable	Field No.	Column Start	Column End	Format	Picture[a]	Codes
LOCATION CODES						
Prov./terr.	1	1	2	I2	99	1-12
Cell reference	2	3	10	A8	XXXXXXXX	variable
Stand number	3	11	20	A10	XXXXXXXXXX	variable
CLASSIFICATION ATTRIBUTES						
Data source	4	21	21	I1	9	1-7,8
Ownership	5	22	22	I1	9	1-7,8
Status	6	23	23	I1	9	1-4,8
Land class	7	24	24	I1	9	1-6,8
Site quality	8	25	25	I1	9	1-7,8,9
Stocking	9	26	26	I1	9	1-5,8,9
Cause of disturbance	10	27	27	I1	9	1-4,8,9
Age	11	28	29	I2	99	0-20,-5,-8,-9
Maturity	12	30	30	I1	9	1-5,8,9
Forest type	13	31	31	I1	9	1-3,8,9
Predominant genus	14	32	33	I2	99	1-13,-8,-9
Year of information	15	34	35	I2	99	46-86,-8
NUMERICAL ATTRIBUTES						
Area (ha)	16	36	43	I8[b]	99999999V	0-99999999
Pulpwood[c] volumes (m^3/ha, 1 sig. digit):						
Black and red spruce	17	44	48	I5[d]	9999V9	0-9999.9,-8.,-9[e]
Other spruce	18	49	53	I5	9999V9	0-9999.9,-8.,-9.
White pine	19	54	58	I5	9999V9	0-9999.9,-8.,-9.
Jack, lodgepole and shore pine	20	59	63	I5	9999V9	0-9999.9,-8.,-9.
Other pine	21	64	68	I5	9999V9	0-9999.9,-8.,-9.
Fir	22	69	73	I5	9999V9	0-9999.9,-8.,-9.
Hemlock	23	74	78	I5	9999V9	0-9999.9,-8.,-9.
Douglas-fir	24	79	83	I5	9999V9	0-9999.9,-8.,-9.
Larch	25	84	88	I5	9999V9	0-9999.9,-8.,-9.
Cedar and other conifers	26	89	93	I5	9999V9	0-9999.9,-8.,-9.
Unspecified conifers	27	94	98	I5	9999V9	0-9999.9,-8.,-9.
Trembling aspen	28	99	103	I5	9999V9	0-9999.9,-8.,-9.
Other poplar	29	104	108	I5	9999V9	0-9999.9,-8.,-9.
Yellow birch	30	109	13	I5	9999V9	0-9999.9,-8.,-9.
Other birch	31	114	118	I5	9999V9	0-9999.9,-8.,-9.
Sugar and black maple	32	119	123	I5	9999V9	0-9999.9,-8.,-9.
Other maple	33	124	128	I5	9999V9	0-9999.9,-8.,-9.
Other broad-leaved species	34	129	133	I5	9999V9	0-9999.9,-8.,-9.
Unspecified broad-leaved species	35	134	138	I5	9999V9	0-9999.9,-8.,-9.
Sawwood volumes (m^3/ha, 1 sig. digit):						
Black and red spruce	36	139	143	I5	9999V9	0-9999.9,-8.,-9.
Other spruce	37	144	148	I5	9999V9	0-9999.9,-8.,-9.
White pine	38	149	153	I5	9999V9	0-9999.9,-8.,-9.
Jack, lodgepole and shore pine	39	154	158	I5	9999V9	0-9999.9,-8.,-9.
Other pine	40	159	163	I5	9999V9	0-9999.9,-8.,-9.
Fir	41	164	168	I5	9999V9	0-9999.9,-8.,-9.
Hemlock	42	169	173	I5	9999V9	0-9999.9,-8.,-9.
Douglas-fir	43	174	178	I5	9999V9	0-9999.9,-8.,-9.
Larch	44	179	183	I5	9999V9	0-9999.9,-8.,-9.
Cedar and other conifers	45	184	188	I5	9999V9	0-9999.9,-8.,-9.
Unspecified conifers	46	189	193	I5	9999V9	0-9999.9,-8.,-9.
Trembling aspen	47	194	198	I5	9999V9	0-9999.9,-8.,-9.
Other poplar	48	199	203	I5	9999V9	0-9999.9,-8.,-9.
Yellow birch	49	204	208	I5	9999V9	0-9999.9,-8.,-9.
Other birch	50	209	213	I5	9999V9	0-9999.9,-8.,-9.
Sugar and black maple	51	214	218	I5	9999V9	0-9999.9,-8.,-9.
Other maple	52	219	223	I5	9999V9	0-9999.9,-8.,-9.
Other broad-leaved species	53	224	228	I5	9999V9	0-9999.9,-8.,-9.
Unspecified broad-leaved species	54	229	233	I5	9999V9	0-9999.9,-8.,-9.

---

[a] Picture codes are as follows:
9 Numeric;
X Alphanumeric;
V Position holder (i.e. an implicit rather than a hard decimal point).

[b] Area not to have any implied decimal point, to be read F8.0.

[c] Pulpwood volumes include sawwood size classes.

[d] Volumes have 1 significant digit implied, to be read F5.1.

[e] Programmers should note that an integer -80 or -90 is used in the volume fields, so that it will be interpreted as a -8. or -9. when read.

Table 3. Exchange format of the compact volume file

Variable	Field No.	Column		Format	Picture[a]	Codes
		Start	End			
LOCATION CODES						
Prov./terr.	1	1	2	I2	99	1-12
Cell reference	2	3	10	A8	XXXXXXXX	variable
CLASSIFICATION ATTRIBUTES						
Ownership	3	11	11	I1	9	1-7,8
Status	4	12	12	I1	9	1-4,8
Land class	5	13	13	I1	9	1-6,8
Stocking	6	14	14	I1	9	1-5,8,9
Age	7	15	16	I2	99	0-20,-5,-8,-9
Maturity	8	17	17	I1	9	1-5,8,9
Forest type	9	18	18	I1	9	1-3,8,9
NUMERICAL ATTRIBUTES						
Area (ha)	10	19	26	I8[b]	99999999V	0-99999999
Pulpwood[c] volumes (m^3/ha, 1 sig. digit):						
Conifers subtotal	11	27	31	I5[d]	9999V9	0-9999.9,-8.,-9.[e]
Broad-leaved species subtotal	12	32	36	I5	9999V9	0-9999.9,-8.,-9.
All species total	13	37	41	I5	9999V9	0-9999.9,-8.,-9.

---

[a] Picture codes are as follows:
9 Numeric;
X Alphanumeric;
V Position holder (i.e. an implicit rather than a hard decimal point).

[b] Area not to have any implied decimal point, to be read F8.0.

[c] Pulpwood volumes include sawwood size classes.

[d] Volumes have 1 significant digit implied, to be read F5.1.

[e] Programmers should note that an integer -80 or -90 is used in the volume fields, so that it will be interpreted as a -8. or -9. when read.

Table 4. Coding of the main file for selected situations

													Numerical attributes			
	Classification attributes													Volumes		
Type of situation	Source	Owner-ship	Status	Land class	Site	Stocking	Cause of dist.	Age	Maturity	Forest type	Predom. genus	Year	Area	Black spruce	Other spruce	White pine
Land classes 2 to 6: unproductive, forest, nonforest, land, and water	X	X	X	X	9	9	9	-9	9	9	-9	X	X	-9.	-9.	-9.
Nonstocked or unproven stocking	X	X	X	X	X	X	X	-9	9	9	-9	X	X	-9.	-9.	-9.
Nonstocked or unproven stocking, but cause not known	X	X	X	X	X	X	8	-9	9	9	-9	X	X	-9.	-9.	-9.
Stocked productive, age and maturity are available	X	X	X	X	X	X	9	X	X	X	X	X	X	X	X	X
Stocked productive, only maturity class is availabe	X	X	X	X	X	X	9	-8	X	X	X	X	X	X	X	X
Uneven-aged	X	X	X	X	X	X	9	-5	5	X	X	X	X	X	X	X
Stocke productive, volumes missing	X	X	X	X	X	X	9	X	X	X	X	X	X	-8.	-8.	0[a]
A total area figure for an uninventoried tract, year unknown	X	8	8	8	8	8	8	-8	8	8	-8	8	X	-8.	-8.	0

[a] Zero volume when the species does not occur.

X: the value is given.

9 and -9:. codes for not applicable.

8 and -8.: codes for missing value.

5 and -5: codes for uneven-aged.

Appendix 3 Exchange format for the auxiliary files

The exchange formats for five auxiliary files are described in this appendix:

1) cull;
2) policy constraint;
3) productivity;
4) stocking mixture within unproven stocking; and,
5) tree size-volume relationship.

The coding in these files is identical to that of the main file; however, two new codes are introduced for the maturity classifier for cull and tree size-volume relationship files. The 'not applicable' code is used in a somewhat different sense than the main file. Here it means that the classifier is not used when linking the auxiliary file to the main file. In addition, a 'not applicable' code is used when a species is outside its range.

1. *Cull*

The cull data were intended to apply only to mature and overmature records; however, some provinces were only able to provide the information for all maturity classes or mature and overmature records combined. Accordingly two special codes are shown in Table 1 for the maturity classifier.

2. *Policy constraint*

Policy constraint may be reported as broad classes, or as more specific percentage figures.

3. *Productivity*

4. *Stocking mixture within unproven stocking*

5. *Tree size-volume relationships*

A mathematical function is used to express the proportional distribution of pulpwood volume relative to the diameter at breast height (dbh).

The tree size-volume relationship was intended to apply only to mature and overmature forests; however, some provinces were only able to provide stock tables for all maturity classes or mature and overmature forests combined. Accordingly, two special codes are shown in Table 5 for the maturity classifier.

Table 1. **Exchange format of the cull file**

Variable	Field No.	Column Start	Column End	Format	Picture[a]	Codes
LOCATION CODES						
Prov./terr.	1	1	2	I2	99	1-12
Region code	2	3	10	A8	XXXXXXXX	variable
Region name	3	11	18	A8	XXXXXXXX	variable
CLASSIFICATION ATTRIBUTES[b]						
Site quality	4	19	19	I1	9	1-7,8,9
Age	5	20	21	I2	99	5-20,-8,-9
Maturity[c]	6	22	22	I1	9	3-4,6,7,8,9
NUMERICAL ATTRIBUTES						
Per cent pulpwood cull:						
Black and red spruce	7	23	25	I3	999V	0-100,-8,-9[d]
Other spruce	8	26	28	I3	999V	0-100,-8,-9
White pine	9	29	31	I3	999V	0-100,-8,-9
Jack, lodgepole and shore pine	10	32	34	I3	999V	0-100,-8,-9
Other pine	11	35	37	I3	999V	0-100,-8,-9
Fir	12	38	40	I3	999V	0-100,-8,-9
Hemlock	13	41	43	I3	999V	0-100,-8,-9
Douglas-fir	14	44	46	I3	999V	0-100,-8,-9
Larch	15	47	49	I3	999V	0-100,-8,-9
Cedar and other conifers	16	50	52	I3	999V	0-100,-8,-9
Unspecified conifers	17	53	55	I3	999V	0-100,-8,-9
Trembling aspen	18	56	58	I3	999V	0-100,-8,-9
Other poplar	19	59	61	I3	999V	0-100,-8,-9
Yellow birch	20	62	64	I3	999V	0-100,-8,-9
Other birch	21	65	67	I3	999V	0-100,-8,-9
Sugar and black maple	22	68	70	I3	999V	0-100,-8,-9
Other maple	23	71	73	I3	999V	0-100,-8,-9
Other broad-leaved species	24	74	76	I3	999V	0-100,-8,-9
Unspecified broad-leaved species	25	77	79	I3	999V	0-100,-8,-9
Per cent sawwood cull:						
Black and red spruce	26	80	82	I3	999V	0-100,-8,-9
Other spruce	27	83	85	I3	999V	0-100,-8,-9
White pine	28	86	88	I3	999V	0-100,-8,-9
Jack, lodgepole and shore pine	29	89	91	I3	999V	0-100,-8,-9
Other pine	30	92	94	I3	999V	0-100,-8,-9
Fir	31	95	97	I3	999V	0-100,-8,-9
Hemlock	32	98	100	I3	999V	0-100,-8,-9
Douglas-fir	33	101	103	I3	999V	0-100,-8,-9
Larch	34	104	106	I3	999V	0-100,-8,-9
Cedar and other conifers	35	107	109	I3	999V	0-100,-8,-9
Unspecified conifers	36	110	112	I3	999V	0-100,-8,-9
Trembling aspen	37	113	115	I3	999V	0-100,-8,-9
Other poplar	38	116	118	I3	999V	0-100,-8,-9
Yellow birch	39	119	121	I3	999V	0-100,-8,-9
Other birch	40	122	124	I3	999V	0-100,-8,-9
Sugar and black maple	41	125	127	I3	999V	0-100,-8,-9
Other maple	42	128	130	I3	999V	0-100,-8,-9
Other broad-leaved species	43	131	133	I3	999V	0-100,-8,-9
Unspecified broad-leaved species	44	134	136	I3	999V	0-100,-8,-9

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[a] Picture codes are as follows:
9 Numeric;
X Alphanumeric;
V Position holder (i.e. an implicit rather than a hard decimal point).

[b] Special codes for classification attributes:
8 or -8 for a missing value code;
9 or -9 if classifier is not used.

[c] Special maturity class codes:
6 = mature and overmature records combined;
7 = all maturity classes combined;
9 = not applicable, which maturity classes are used is not known; or based on age class only and maturity classes are not used.

[d] Use the not applicable code (-90) for species that do not occur in a province or region. For example most provinces do not have Douglas-fir.

Table 2. Exchange format of the policy constraint file

		Column				
Variable	**Field No.**	**Start**	**End**	**Format**	**Picture**[a]	**Codes**
LOCATION CODES						
Prov./terr.	1	1	2	I2	99	1-12
Region code	2	3	10	A8	XXXXXXXX	variable
Region name	3	11	18	A8	XXXXXXXX	variable
CLASSIFICATION ATTRIBUTES						
Ownership	4	19	19	I1	9	1-7,8
Status	5	20	20	I1	9	1-4,8
Unassigned	6	21	21	I1	9	
NUMERICAL ATTRIBUTES[b]						
Constraint class[c]	7	22	22	I1	9	1-5,9
Per cent constrained	8	23	25	I3	999	0-100,-9

---

[a] Picture codes are as follows:
9 Numeric;
X Alphanumeric;
V Position holder (i.e. an implicit rather than a hard decimal point).

[b] Use the not applicable code in one of constraint class or per cent constrained to show which of the two numerical attributes is not being used.

[c] The constraint classes are:
1 = 0 to 20 per cent is constrained;
2 = 21 to 50 per cent is constrained;
3 = 51 to 80 per cent is constrained;
4 = 81 to 100 per cent is constrained;
5 = scheduled for clearing and conversion to nonforest; and
9 = not applicable.

Table 3. Exchange format of the productivity file

		Column				
Variable	**Field No.**	**Start**	**End**	**Format**	**Picture**[a]	**Codes**
LOCATION CODES						
Prov./terr.	1	1	2	I2	99	1-12
Region code	2	3	10	A8	XXXXXXXX	variable
Region name	3	11	18	A8	XXXXXXXX	variable
CLASSIFICATION ATTRIBUTES[b]						
Site quality	4	19	19	I1	9	1-7,8,9
Forest type	5	20	20	I1	9	1-3,8,9
Predominant genus	6	21	22	I2	99	1-13,-8,-9
NUMERICAL ATTRIBUTES[c]						
Mean annual increment at rotation age to 1 significant digit ($\mathrm{m}^3/\mathrm{ha}\cdot\mathrm{yr}$)						
Coniferous subtotal	7	23	30	F8.1	9999999V9	0-99.9,-8.
Broad-leaved species subtotal	8	31	38	F8.1	9999999V9	0-99.9,-8.
Undifferentiated species total	9	39	46	F8.1	9999999V9	0-99.9,-8.
Total, all species	10	47	54	F8.1	9999999V9	0-99.9,-8.

---

[a] Picture codes are as follows:
9 Numeric;
X Alphanumeric;
V Position holder (i.e. an implicit rather than a hard decimal point).

[b] Special codes for classification attributes:
8 or -8 for a missing value code;
9 or -9 if classifier is not used.

[c] When the data are not available by coniferous and broad-leaved species then the undifferentiated species field is used and -8. (or -80) codes are used in fields 7 and 8. Field 10 is either the sum of fields 7 and 8 or the value in field 9.

Table 4. **Exchange format of the stocking mixture file**

Variable	Field No.	Column		Format	Picture[a]	Codes
		Start	End			
LOCATION CODES						
Prov./terr.	1	1	2	I2	99	1-12
Region code	2	3	10	A8	XXXXXXXX	variable
Region name	3	11	18	A8	XXXXXXXX	variable
CLASSIFICATION ATTRIBUTES[b]						
Site quality	4	19	19	I1	9	1-7,8
Cause of disturbance	5	20	20	I1	9	1-4,8
NUMERICAL ATTRIBUTES						
Per cent by stocking class						
Nonstocked	6	21	23	I3	999V	0-100,-8,-9
Partially stocked	7	24	26	I3	999V	0-100,-8,-9
Fully stocked	8	27	29	I3	999V	0-100,-8,-9
Unquantified stocked	9	30	32	I3	999V	0-100,-8,-9

---

[a] Picture codes are as follows:
9 Numeric;
X Alphanumeric;
V Position holder (i.e. an implicit rather than a hard decimal point).

[b] Special codes for classification and numerical attributes:
8 or -8 for a missing value code;
9 or -9 if classifier is not used.

Table 5. **Exchange format of the tree size-volume relationship file**

Variable	Field No.	Column		Format	Picture[a]	Codes
		Start	End			
LOCATION CODES						
Prov./terr.	1	1	2	I2	99	1-12
Region	2	3	10	A8	XXXXXXXX	variable
Region name	3	11	18	A8	XXXXXXXX	variable
CLASSIFICATION ATTRIBUTES[b]						
Site quality	4	19	19	I1	9	1-7,8,9
Stocking	5	20	20	I1	9	3-5,8,9
Age	6	21	22	I2	99	5-20,-8,-9
Maturity[c]	7	23	23	I1	9	3-4,6,7,8,9
Species group[d]	8	24	25	I2	99	1-20,-8,-9
NUMERICAL ATTRIBUTES						
Distribution type[e]	9	26	27	I2	99	1-2
Parameter a (location)	10	28	37	F10.6	9999V999999	0-50.
Parameter b (scale)	11	38	48	F11.6	99999V999999	0-100.
Parameter c (shape)	12	49	58	F10.6	9999V999999	0-20.
Left truncation point (cm)[f]	13	59	64	F6.2	9999V99	0-50.
DATA DESCRIPTION[g]						
Data grouping type[h]	14	65	66	I2	99	0-1,-8
Width of diameter classes for grouped data (cm)[i]	15	67	71	F5.2	999V99	0-999.99,-7.,-8.
Right censoring point (cm)[j]	16	72	77	F6.2	9999V99	0-9999.9,-8.
Total no. of observations	17	78	83	I6	999999	1-999999,-8
FIT STATISTICS						
Sum of absolute deviations	18	84	93	F10.4	999999V9999	0-999999.9,-8.
Kolmogorov-Smirnov	19	94	100	F7.4	999V9999	0-1.000,-8.
Chi-square	20	101	110	F10.4	999999V9999	0-999999.9,-8.

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[a] Picture codes are as follows:
9 Numeric;
X Alphanumeric;
V Position holder (i.e. an implicit rather than a hard decimal point).

[b] Special codes for classification attributes:
8 or -8 for a missing value code;
9 or -9 if classifier is not used.

[c] Special maturity class codes:
6 = mature and overmature records combined;
7 = all maturity classes combined;

[d] The codes for species group are as follows:

1	Black and red spruce	11	Unspecified conifers
2	Other spruce	12	Trembling aspen
3	White pine	13	Other poplar
4	Jack, lodgepole, and shore pine	14	Yellow birch
5	Other pine	15	Other birch
6	Fir	16	Sugar and black maple
7	Hemlock	17	Other maple
8	Douglas-fir	18	Other broad-leaved species
9	Larch	19	Unspecified broad-leaved species
10	Cedar and other conifers	-8	Missing value

[e] Distribution type:
1 = 2- or 3-parameter complete Weibull distribution;
2 = 2-parameter, left-truncated Weibull distribution.

[f] Use 0.0 if there is no left truncation.

[g] Use code -8 or -8. if the data description or fit statistics are missing or not available.

[h] Data grouping type:
0 = ungrouped data;
1 = grouped data.

[i] Use 0.0 if the data are ungrouped. Use -7. if the grouping is not a constant diameter class.

[j] Use 0.0 if there is no right censoring.

Appendix 4. Magnetic tape specifications for data exchange

DEC computers

- 800, 1600, 6250 BPI
- ANSI standard labels (native labels)
- use PIP or COPY utility
- block size not important

Non-DEC computers

- 800, 1600, 6250 BPI
- ANSI standard labels
- ASCII code
- block size not important

or

- no labels
- ASCII or EBCDIC (specify)
- fixed-length records
- block size is a multiple of record length and is less than 16K (specify)

Appendix 5. Commercial[a] tree species for predominant genus and species group

Predominant genus	Species group	Common[b] name	Botanical[c] name
Spruce	Black and red spruce	Black spruce	*Picea mariana* (Mill.) BSP
		Red spruce	*Picea rubens* Sarg.
	Other spruce	Norway spruce	*Picea abies* (L.) Karst.
		Engelmann spruce	*Picea engelmannii* (Parry) Engelm.
		White spruce	*Picea glauca* (Moench) Voss
		Sitka spruce	*Picea sitchensis* (Bong.) Carr.
Pine	White pine	Western white pine	*Pinus monticola* Dougl.
		Eastern white pine	*Pinus strobus* L.
	Jack, lodgepole, and shore pine	Jack pine	*Pinus banksiana* Lamb.
		Lodgepole pine	*Pinus contorta* Dougl. var. *latifolia* Engelm.
		Shore pine	*Pinus contorta* var. *contorta*
	Other pine	Whitebark pine	*Pinus albicaulis* Engelm.
		Austrian pine	*Pinus nigra* Arnold
		Ponderosa pine	*Pinus ponderosa* Dougl.
		Red pine	*Pinus resinosa* Ait.
		Pitch pine	*Pinus rigida* Mill.
		Scots pine	*Pinus sylvestris* L.
Fir	Fir	Amabilis fir	*Abies amabilis* (Dougl.) Forbes
		Balsam fir	*Abies balsamea* (L.) Mill.
		Grand fir	*Abies grandis* (Dougl.) Lindl.
		Alpine fir	*Abies lasiocarpa* (Hook.) Nutt.
Hemlock	Hemlock	Eastern hemlock	*Tsuga canadensis* (L.) Carr.
		Western hemlock	*Tsuga heterophylla* (Raf.) Sarg.
		Mountain hemlock	*Tsuga mertensiana* (Bong.) Sarg.
Douglas-fir	Douglas-fir	Douglas-fir	*Pseudotsuga menziesii* (Mirb.) Franco *Pseudotsuga menziesii* var. *glauca* (Beissn.) Franco
Larch	Larch	European larch	*Larix decidua* Mill.
		Tamarack	*Larix laricina* (Du Roi) Koch
		Western larch	*Larix occidentalis* Nutt.
Cedar and other conifers	Cedar and other conifers	Eastern white cedar	*Thuja occidentalis* L.
		Western red cedar	*Thuja plicata* Don.
		Western yew	*Taxus brevifolia* Nutt.
		Yellow cypress	*Chamaecyparis nootkatensis* (Lamb.) Spach
		Rocky Mountain juniper	*Juniperus scopulorum* Sarg.
		Eastern red cedar	*Juniperus virginiana* L.
Poplar	Trembling aspen	Trembling aspen	*Populus tremuloides* Michx.
	Other poplar	European white poplar	*Populus alba* L.
		Balsam poplar	*Populus balsamifera* L.
		Black cottonwood	*Populus balsamifera* ssp. *trichocarpa* (T.&G.) Brayshaw
		Eastern cottonwood	*Populus deltoides* Marsh.
		Largetooth aspen	*Populus grandidentata* Michx.
		Black poplar	*Populus nigra* L.
		Hybrid poplar	*Populus* sp. x *Populus* sp.
Birch	Yellow birch	Yellow birch	*Betula lutea* Michx. f. (*Betula alleghaniensis* Britt.)
	Other birch	Cherry birch	*Betula lenta* L.
		White birch	*Betula papyrifera* Marsh.
		Grey birch	*Betula populifolia* Marsh.
Maple	Sugar and black maple	Sugar maple	*Acer saccharum* Marsh.
		Black maple	*Acer nigrum* Michx. f.
	Other maple	Vine maple	*Acer circinatum* Pursh
		Bigleaf maple	*Acer macrophyllum* Pursh
		Manitoba maple	*Acer negundo* L.
		Red maple	*Acer rubrum* L.
		Silver maple	*Acer saccharinum* L.

Appendix 5. (cont'd)

Predominant genus	Species group	Common[b] name	Botanical[c] name
Other broad-leaved species	Other broad-leaved species	Black willow	*Salix nigra* Marsh.
		Bitternut hickory	*Carya cordiformis* (Wang.) Koch
		Pignut hickory	*Carya glabra* (Mill.) Sweet
		Red hickory	*Carya ovalis* (Wang.) Sarg.
		Shagbark hickory	*Carya ovata* (Mill.) Koch
		Butternut	*Juglans cinerea* L.
		Black walnut	*Juglans nigra* L.
		Sitka alder	*Alnus crispa* (Ait.) Pursh ssp. *sinuata* (Regel) Hult.
		Red alder	*Alnus rubra* Bong.
		Hop-hornbeam	*Ostrya virginiana* (Mill.) Koch
		Beech	*Fagus grandifolia* Ehrh.
		White oak	*Quercus alba* L.
		Swamp white oak	*Quercus bicolor* Willd.
		Garry oak	*Quercus garryana* Dougl.
		Bur oak	*Quercus macrocarpa* Michx.
		Pin oak	*Quercus palustris* Muenchh.
		Chinquapin oak	*Quercus prinoides* Willd. var. *acuminata* (Michx.) Gl.
		Chestnut oak	*Quercus prinus* L.
		Red oak	*Quercus rubra* L.
		Black oak	*Quercus velutina* Lam.
		White elm	*Ulmus americana* L.
		Slippery elm	*Ulmus rubra* Muhl.
		Rock elm	*Ulmus thomasii* Sarg.
		Red mulberry	*Morus rubra* L.
		Tulip-tree	*Liriodendron tulipifera* L.
		Cucumber-tree	*Magnolia acuminata* L.
		Sassafras	*Sassafras albidum* (Nutt.) Nees
		Sycamore	*Platanus occidentalis* L.
		Black cherry	*Prunus serotina* Ehrh.
		Honey-locust	*Gleditsia triacanthos* L.
		Basswood	*Tilia americana* L.
		Black gum	*Nyssa sylvatica* Marsh.
		Eastern flowering dogwood	*Cornus florida* L.
		Western flowering dogwood	*Cornus nuttallii* Audubon
		Arbutus	*Arbutus menziesii* Pursh
		White ash	*Fraxinus americana* L.
		Black ash	*Fraxinus nigra* Marsh.
		Red ash	*Fraxinus pennsylvanica* Marsh.
		Green ash	*Fraxinus pennsylvanica* var. *subintegerrima* (Vahl) Fern.
		Blue ash	*Fraxinus quadrangulata* Michx.

[a] Commercial trees as described by Hosie (1969) in "Native trees of Canada', seventh edition.

[b] Common names are from Hosie (1969).

[c] Scientific names and taxonomic order are from Scoggan (1978) "The flora of Canada." Species are arranged alphabetically within a genus.

Appendix 6. Utilization specifications for volumes

Province or territory and species or zone	Gross or Net[a]	Limits (cm)					
		<—— Pulpwood ——>			<—— Sawwood ——>		
		dbh	Top dib	Stump height	dbh	Top dib	Stump height
Newfoundland	Gross	9.0	7.6[b]	15	...	...	...
Prince Edward Island	Gross						
Coniferous species		9.0	8.0	15	22.0	20.0	15
Broad-leaved species		9.0	8.0	15	26.0	14.0	15
Nova Scotia 3P	Gross	9.0	7.0	15[c]			
Coniferous species					21.0	17.0	15[c]
Broad-leaved species					23.0	17.0	15[c]
Nova Scotia TSP	Gross	9.1	9.1	15[c]			
Coniferous species					20.3	17.8	15[c]
Broad-leaved species					22.9	17.8	15[c]
New Brunswick	Gross	9.0	9.0	30	19.0	9.0	30
Quebec	Gross	9.0	9.0	15	...	...	...
Ontario	Gross	9.0	7.0	30	...	...	...
Manitoba	Gross						
Spruce, pine, fir		9.0	7.0	30	25.0	7.0	30
All other species		9.0	9.0	30	25.0	9.0	30
Saskatchewan	Gross	7.0	7.0	30	17.0	15.0	30
Alberta	Gross	13.0	7.0	30	20.0	13.0	30
British Columbia	Net[d]						
Coast		17.5	10.0	30	22.5	10.0	30
Interior		12.5	10.0	30	17.5	10.0	30
Yukon Territory	Gross	9.1	7.6	30	25.1	7.6	30
Northwest Territories	Gross	10.2	10.2	30	...	...	...

[a] gross or net merchantable volumes

[b] The top diameter is measured outside the bark for Newfoundland only.

[c] Each tree in Nova Scotia 3P and TSP inventories is individually measured for optimum stump height. The stump height described is the average.

[d] In B.C. the volume figures were increased (grown) to what would be expected from a survey done in 1986.

dbh Minimum diameter at breast height (1.30 m above ground level) outside the bark. This is the threshold dbh rather than a class midpoint.

top dib top diameter inside bark.

... not applicable as sawwood volumes are not available.

3P 3P (Probability proportional to prediction) inventory.

TSP Temporary Sample Plot inventory.